

**UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF NEW YORK**

ALASKA ELECTRICAL PENSION FUND;
GENESEE COUNTY EMPLOYEES'
RETIREMENT SYSTEM; COUNTY OF
MONTGOMERY, PENNSYLVANIA;
COUNTY OF WASHINGTON,
PENNSYLVANIA; CITY OF NEW
BRITAIN, CONNECTICUT, UNIQA
CAPITAL MARKETS GMBH ON BEHALF
OF UNIQA DOLLAR BOND,
PENNSYLVANIA TURNPIKE
COMMISSION, ERSTE
ABWICKLUNGSANSTALT (EAA) and
PORTIGON AG on behalf of themselves and
all others similarly situated,

Plaintiffs,

vs.

BANK OF AMERICA, N.A.; BARCLAYS
BANK PLC; B.N.P. PARIBAS SA;
CITIGROUP INC.; CREDIT SUISSE AG,
NEW YORK BRANCH; DEUTSCHE BANK
AG; THE GOLDMAN SACHS GROUP,
INC.; HSBC BANK USA, N.A.; ICAP
CAPITAL MARKETS LLC; JPMORGAN
CHASE & CO.; MORGAN STANLEY & CO.
LLC; NOMURA SECURITIES
INTERNATIONAL, INC.; ROYAL BANK
OF SCOTLAND PLC; UBS AG; and WELLS
FARGO BANK, N.A.,

Defendants.

Case No.: 14-cv-7126 (JMF)

**SECOND CONSOLIDATED
AMENDED CLASS ACTION
COMPLAINT**

JURY TRIAL DEMANDED

TABLE OF CONTENTS

Page

NATURE OF THE ACTION	1
JURISDICTION AND VENUE	10
THE PARTIES.....	11
FACTUAL ALLEGATIONS	20
I. BACKGROUND ALLEGATIONS.....	20
A. Interest Rate Derivatives and ISDAfix Transactions.....	20
B. The Purported Process of Setting ISDAfix	29
C. Government Investigations Reveal the Extent of Collusion Between Defendants in Manipulating Financial Benchmarks.....	33
D. Further Investigations Into Financial Benchmarks Confirm Defendants’ Tools of the Trade	41
II. DEFENDANTS CONSPIRED TO UNIFORMLY RUBBERSTAMP THE “REFERENCE RATE” THAT MEMBERS OF THE CONSPIRACY HAD DRIVEN	45
A. Defendants Repeatedly Claim – Impossibly – To Have Had Identical Rates.....	46
B. The Level of Uniformity Seen in Defendants’ ISDAfix Submissions Was Undermined by Their Concurrent Market Rates	50
C. The Level of Uniformity Seen in Defendants’ ISDAfix Submissions Abated Once Regulatory Scrutiny Increased.....	51
1. Defendant Banks’ submissions begin to disperse in December 2012.....	51
2. The change in behavior cannot be explained by anything other than the breaking of the conspiracy	60
III. DEFENDANTS AGREED NOT TO COMPETE IN THE SWAP MARKET TO DRIVE ICAP’S REFERENCE RATE TO THEIR PREFERRED LEVEL.....	63
A. Even a Small Sample of the Evidence Produced to Date Confirms the Reference Rate Was Routinely Manipulated By All of the ISDAfix Panel Banks.....	64

B.	The Use of “Screens” To Identify Further Acts of Active Manipulation	68
C.	Defendants “Banged the Close” to Routinely Rig the Reference Rate	70
D.	Defendants Conspired with ICAP to Delay the Publication of Price Information in Order to Manipulate the Reference Rate	80
E.	The Anomalies Suspiciously Started to Dissipate Around December 2012.....	85
1.	The same tests used by the experts above show signs of a waning conspiracy by mid to late 2013	85
2.	Other signs of changing behavior starting in December 2012.....	92
F.	Evidence that Defendants Were Jointly Behind These Trading Anomalies.....	105
IV.	PLAINTIFFS WERE INJURED AS A RESULT OF DEFENDANTS’ MANIPULATION	108
A.	ISDAfix Transactions	108
B.	Swaps and Other Derivatives that Do Not Expressly Incorporate ISDAfix	112
V.	DEFENDANTS’ MISCONDUCT BREACHED THE TERMS OF THEIR ISDAFIX TRANSACTIONS	116
	EQUITABLE TOLLING OF THE STATUTE OF LIMITATIONS DUE TO DEFENDANTS’ CONCEALMENT OF THE CONSPIRACY	119
	CLASS ACTION ALLEGATIONS	125
	CLAIMS FOR RELIEF	128
	FIRST CLAIM FOR RELIEF	128
	SECOND CLAIM FOR RELIEF	129
	FOURTH CLAIM FOR RELIEF	131
	PRAYER FOR RELIEF	133
	DEMAND FOR JURY TRIAL	134

Plaintiffs Alaska Electrical Pension Fund; Genesee County Employees' Retirement System; the County of Montgomery, Pennsylvania; the County of Washington, Pennsylvania; the City of New Britain, Connecticut; UNIQA Capital Markets GmbH, appearing here on behalf of the fund UNIQA Dollar Bond; Pennsylvania Turnpike Commission, Erste Abwicklungsanstalt (EAA), and Portigon AG (collectively, "Plaintiffs"); individually, collectively, and on behalf of all persons and entities similarly situated, bring this class action under Section 1 of the Sherman Antitrust Act, Sections 4 and 16 of the Clayton Antitrust Act, and certain state laws, for actual damages, treble damages, punitive damages, declaratory and injunctive relief, costs of suit, pre- and post-judgment interest, and other relief, and allege as follows:

NATURE OF THE ACTION

1. This case involves a conspiracy by Defendants to manipulate "ISDAfix." ISDAfix is a key benchmark for interest rates that determines the pricing, cashflows, and payments terms for a range of financial instruments ("ISDAfix Transactions"¹). Defendants (and their affiliates) are not only the primary market makers for ISDAfix Transactions, but they set ISDAfix along with ICAP Capital Markets LLC ("ICAP"), an inter-dealer broker that participated in Defendant Banks' (defined below) conspiracy.

2. Plaintiffs and members of the Class (defined below) are Defendants' customers, contracting directly with Defendant Banks (and their affiliates) for interest rate swaps and

¹ As used here, "ISDAfix Transactions" are all contracts, derivatives, notes, debt instruments, or any other type of transaction whose payments or value (or both) are linked to USD ISDAfix rates. This includes, without limitation, to the extent they are linked to USD ISDAfix rates, such products as swaps, swaptions, constant maturity swaps, inverse floaters and snowballs, steepeners and flatteners, digital and callable range accrual notes, swapnote futures, cash-settled swap futures, interest-rate linked structured notes, and variance and volatility swaps. For the sake of further clarity, physically settled swaptions are referred to as ISDAfix Transactions for purposes of this Complaint.

ISDAfix Transactions. By secretly colluding to collectively manipulate ISDAfix throughout the Class Period (defined below), Defendants extracted supra-competitive profits from Plaintiffs and the Class. Plaintiffs bring this action to redress the harm inflicted by Defendants (and their affiliates), which likely amounts to billions of dollars class-wide.

3. ISDAfix was designed to represent current market fixed rates for interest rate swaps of various terms. Specifically, it is supposed to be an average mid-market swap rate for six major currencies at selected maturities. This case concerns the ISDAfix rate for U.S. Dollars (“USD”), which was, until early 2014, administered by ICAP.

4. Throughout the Class Period, the USD ISDAfix swap rates were set every day between 11:00 and 11:15 a.m. Eastern Time in a two-step process.² The ISDAfix setting process began with rates drawn from actual transactions in the swaps market, where Defendants were supposed to be operating independently as horizontal competitors. From these transactions, ICAP was supposed to calculate a “reference rate,” which was to be ICAP’s estimate of the average trading rate of USD interest rate swaps of various tenors at 11:00 a.m. ICAP circulated the reference rates to the Defendant Banks, “polling” each of them as to the bank’s actual bid/offer spread. ICAP then adjusted the reference rates based on Defendants’ submissions with the resulting figures being the final, published ISDAfix rates for the day. From start to finish, ISDAfix was supposed to be set based on real transactions and prices drawn from a competitive market.

5. Rather than allow free market forces to set ISDAfix, Defendants conspired to, and did, rig it to their advantage.

² USD 1-year ISDAfix swap rates were set twice daily, at 11:00 a.m. and 3:00 p.m.

First, Defendants shared with each other their own competitively sensitive pricing information, such as intended orders and how balanced or unbalanced the banks' exposure was on a particular day, with the purpose and effect of rigging the ISDAfix reference rate. No competitor operating independently would ever share such commercially sensitive information with its competitors absent collusion. By sharing such information, the Defendant Banks were able to coordinate their trading activities leading up to the ISDAfix polling window.

6. One way Defendants would manipulate ISDAfix was to "bang the close". This involved executing a series of rapid-fire transactions through ICAP immediately before the opening of the polling window. For example, on August 10, 2010, when another desk at Barclays took a position that gave the Barclays swaps desk an incentive to push up the 10-year ISDAfix rate and push down the 2-year ISDAfix rate, Barclays swap desk Trader A, US Rate Derivatives, coordinated with ICAP Broker A on the timing, direction, and amount of "ammo" necessary to manipulate those two ISDAfix rates:

Trader A: "Could you pick me up?"

Broker A: "I got you picked up."

Trader A: "Oh, okay. No one else is on the line, right?"

Broker A: "No."

Trader A: "Alright, uh, I care about the elevens [11:00 a.m. fixings] okay."

Broker A: "Oh, great. What, okay, what do you wanna do and how much do you have to burn?"

Trader A: "Yeah, so no one's on the line right?"

Broker A: "No, not at all."

Trader A: "Alright, um. So, I'm gonna want, uh, 10s higher and 2s lower, okay? So –"

Broker A: "Okay."

Trader A: “Um, just, your discretion, I care more about 10s, but would care about both of ’em. Um, and have, uh, like two hundred [million] 10s and five hundred [million] 2-year spreads to use, okay?”

Broker A: “Okay fine, you got it.”³

7. Similarly, on May 14, 2007, ICAP Broker B wrote to Trader B, who worked on the Swaps Trading desk at Defendant BNP, complaining that “11 OCLOCK is becoming too complicated, people are timing the action in the last 10 seconds,” and that it is “hard to hit 2 maturitie [*sic*] at the same time with 2 or 3 seconds left, and then they get upset the screen didn’t print what they wanted it to be.”⁴

8. ICAP routinely served as a “go-between” for the Bank Defendants, facilitating the exchange of trading information. For example, on April 26, 2007, Barclays’ Trader C, who was Head of Interest Rate Options Trading, asked ICAP Broker A: “[H]ave you seen like Goldman, uh, doing much at eleven?” Broker A responded, “I, not lately I have. I mean, [the trader at Goldman] does from time to time, but over the last couple of days I have not.”⁵

9. Defendants would also instruct ICAP to delay reporting large market moving transactions until after the setting of ISDAfix. In a recent \$120 million sanctions order imposed by the CFTC upon Goldman Sachs for manipulation of ISDAfix rates, the CFTC noted that Goldman on occasion would instruct ICAP to delay reporting trades to get the ISDAfix rate it wanted, with a Goldman trader telling an ICAP broker “just have your screen guy go to coffee [or] to the bathroom [instead of timely reporting trades prior to 11am].”⁶

³ BARC-IFX_00063898.

⁴ BNPP_AK_00103254.

⁵ BARC-IFX_00011588.

⁶ See Order Instituting Proceedings Pursuant to Section 6(c) and 6(d) of the Commodity Exchange Act, Making Findings, and Imposing Remedial Sanctions (Dec 21, 2016), at 11.

10. Defendants would also punish ICAP by putting it “in the [penalty] box” (*i.e.*, by withholding trades from ICAP, thereby lowering their broker commissions) where ICAP failed to effectively implement the banks’ desire to manipulate ISDAfix. For example, on May 4, 2007, Trader D, a Director at Deutsche Bank, purported to punish ICAP because ICAP “f’ed [Deutsche Bank] on an isdafix setting.”⁷

11. Through these coordinated practices, Defendants moved the swaps market in the desired direction just prior to 11:00 a.m., when ICAP would calculate the reference rates to use in polling the Defendant Banks. The Defendants Banks’ actions in the swaps market purposely impacted the reference rates, and were so successful that traders would brag of their results. A Citi trader, Trader E, Director of US Exotics, once boasted that “[I] actually push the isdafixing on the days when it’s close . . . surprising[ly] easy to push!”⁸

12. Similarly, on August 20, 2009 Trader F at Morgan Stanley queried several competitors at Deutsche Bank: “u guys dont have much isdafix . . . as in im v surprised.” Trader F then continued: “here [at Morgan Stanley] it is much bigger, as in the option guys r all over it and insist on moving screen etc . . . gives good opportunities for others tho!!”⁹

13. Economic analyses commissioned by Plaintiffs confirm this collusive conduct: through the application of statistical tests and economic “screens,” Plaintiffs’ experts have identified thousands of instances of manipulation, across multiple tenors, occurring on *over 1,700 days* during the Class Period. In other words, they found signs of *market manipulation* on *nearly every trading day* during the Class Period. These movements can only be explained by

⁷ DB-SDNY-ISDAFIX_00078095.

⁸ Citi-ISDAFIX-Civil-00106909.

⁹ DB-SDNY-ISDAFIX_00142608.

collusion, and this is in line with, but in addition to, the fact that Defendants were rubberstamping the ISDAfix reference rates on the back end nearly every trading day during the Class Period, as described below.

14. *Second*, Defendants colluded with respect to their ICAP submissions during the polling process. The Defendant Banks agreed with each other that they would routinely not disturb the reference rates posted by ICAP, even though the polling process was supposed to be a *safeguard against* market manipulation. In a market free of collusion, a reference rate that had been subject to dramatic, last-minute swings would have been rejected by Defendant Banks as not reflecting the prices at which each would be willing to enter into swaps.

15. Rather than make honest, individual submissions to ICAP, reflecting the true market price, nearly *every day for multiple years*, the Defendant Banks incredibly claimed to have the *exact same* bid/ask spread, *down to five decimal points*. The odds against Defendant Banks unilaterally submitting over an extended period of time the exact same quotes without colluding are astronomical. Yet, the economic and record evidence reveals this to be precisely what happened.

16. A given bank was willing to submit to ICAP the exact same rate as the other Defendant Banks even if it was personally agnostic (or even against) the direction the reference rate had moved on a particular day because the other banks would return the favor on another day. There were more profits to be earned for Defendants in maintaining the shared ability to manipulate ISDAfix over the long term than there were to be lost due to a divergence of interests on any particular trading day.

17. Absent collusion, it would not have made economic sense for any of the Defendants to engage in the conduct outlined above and documented below in detail. A

Defendant Bank acting on its own would incur too large a risk that the market would actually move against it. Thus, attempts to manipulate ISDAfix by trying to move the market for swaps was a risky and ultimately hopeless task for any one market participant – but not for the Defendant Banks acting collectively. Not only was the swaps market too big to be consistently moved except by a combination of these market-dominating Defendants, but *only these Defendants* could ensure the resulting impact on reference rates was not undone through an honest “polling” process on the back end.

18. Defendants’ conspiracy harmed Plaintiffs and members of the Class. Plaintiffs and the Class were injured each time they received reduced payments or made inflated payments on ISDAfix Transactions, or traded in “vanilla” swaps which were the primary product Defendants manipulated in order to influence ISDAfix. The entire day’s trading activities for swaps were distorted by Defendants’ collusive efforts to move ICAP’s reference rate, *i.e.*, to fix the price for swaps in the run-up to the polling process.

19. Defendants carried out their unlawful conspiracy for years in secret, and without detection, until in 2013 government regulators first disclosed that they were investigating Defendants’ manipulation of ISDAfix.

20. In April 2013, the Commodity Futures Trading Commission (“CFTC”) began probing price manipulation by ICAP and interviewing ICAP brokers as well as employees of the Defendant Banks. In August 2013, based on recorded telephone calls and emails that had been reviewed, the CFTC reportedly concluded that the Defendant Banks had instructed ICAP brokers to facilitate as many interest rate swaps as possible to push ISDAfix to a predetermined level.

21. On September 9, 2014, *Bloomberg* reported that the CFTC had “told the U.S. Justice Department they’ve *found evidence of criminal behavior* following an investigation into

banks' alleged manipulation of ISDAfix[.]”¹⁰ Other regulators, such as the U.K. Financial Conduct Authority and Germany's financial regulator, BaFin, have launched parallel probes into the manipulation of ISDAfix, and news reports indicate that criminal investigations are ongoing in the United States.¹¹

22. In May 2016, the CFTC ordered Barclays to pay a \$115 million penalty for attempted manipulation and false reporting of ISDAfix, finding that “varied and sophisticated means [had been] employed by Barclays traders in their attempts to manipulate USD ISDAFIX.”¹² In May 2016, the CFTC ordered Citibank to pay a \$250 million penalty for attempted manipulation and false reporting of ISDAFix, finding - among other evidence of wrongdoing - that on multiple occasions Citibank “submitted a rate or spread higher or lower than the reference rates” because it “had a derivatives position settling or resetting against the

¹⁰ Matthew Leising and Tom Schoenberg, *CFTC Said to Alert Justice Department of Criminal Rate Rigging*, Bloomberg (Sept. 9, 2014), <http://www.bloomberg.com/news/2014-09-08/cftc-said-to-alert-justice-department-of-criminal-rate-rigging.html>. See also Tom Schoenberg, Greg Farrell and David McLaughlin, *U.S. Preparing Charges Against Banks in Currency Rate-Rigging Scandals*, Bloomberg (Oct. 8, 2014) <http://www.bloomberg.com/news/2014-10-08/u-s-said-to-ready-charges-against-banks-in-forex-rigging.html> (noting that “[e]vidence produced as part of [Libor settlement] agreements also is being used in a criminal probe of alleged manipulation of ISDAfix . . . according to a person with knowledge of the matter”).

¹¹ Ben Protess and Jessica Silver-Greenberg, *Big Banks Face Another Round of U.S. Charges*, New York Times (Oct. 6, 2014), <http://dealbook.nytimes.com/2014/10/06/big-banks-face-another-round-of-u-s-charges> (“The Justice Department . . . has widened its focus to include a criminal investigation into banks that set an important benchmark for interest rate derivatives, a previously unreported development that coincides with international regulators’ [sic] proposing overhauls to the rate-setting process.”).

¹² See, e.g., *CFTC Orders Barclays to Pay \$115 Million Penalty for Attempted Manipulation of and False Reporting of U.S. Dollar ISDAFIX Benchmark Swap Rates* (May 20, 2015), <http://www.cftc.gov/PressRoom/PressReleases/pr7180-15>.

USD ISDAFIX benchmark, [and wanted] to benefit that . . . position.”¹³ In December 2016, the CFTC announced that it had reached a \$120 million settlement with Goldman Sachs after finding that traders at Goldman Sachs had made it a regular practice to manipulate ISDAFix from January 2007 to March 2012.¹⁴

23. These probes have not only turned up evidence of Defendants’ wrongdoing but have also prompted Defendants to take actions evidencing consciousness of guilt. Tellingly, *both* anomalous patterns uncovered by Plaintiffs’ experts – in the trading activity leading up to 11:00 a.m., *and* in the consistently identical responses to ICAP’s poll – began to dissipate at the exact same time. Both patterns began to dissipate in December 2012, when Defendant Banks came under increasing scrutiny for multiple benchmark-setting scandals, such as that involving the London Interbank Offered Rate (“LIBOR”), in which ICAP itself has been implicated. That both phenomena began to fade at this same time provides further evidence of who was behind the observed trading anomalies.

24. As government regulators continued to look into Defendants’ conspiracy, numerous banks cut ties to ISDAfix. By September 2013, Defendants The Goldman Sachs Group, Inc., HSBC Bank USA, N.A., Morgan Stanley & Co. LLC, Nomura Securities International, Inc., Royal Bank of Scotland plc, and Wells Fargo Bank, N.A. had all abandoned the process. Because of ICAP’s involvement in this conspiracy, ISDA removed ICAP from its role as the administrator of the USD ISDAfix rates in January 2014.

¹³ See, e.g., *CFTC Orders Citibank to Pay \$250 Million for Attempted Manipulation and False Reporting of U.S. Dollar ISDAFIX Benchmark Swap Rates* (May 25, 2016), <http://www.cftc.gov/PressRoom/PressReleases/pr7371-16>.

¹⁴ Commodity Futures Trading Commission, Order Instituting Proceedings Pursuant to Sections 6(c) and 6(d) of the Commodity Exchange Act, Making Findings, and Imposing Remedial Sanctions (“Goldman CFTC Order”), CFTC Dkt. No. 17-03 (Dec. 21, 2016).

25. In reaction to the rate-fixing scandals, the United Kingdom has moved to criminalize any manipulation of benchmark rates, including ISDAfix.¹⁵ The ISDAfix rate setting process was also brought under the supervision of the U.K.'s Financial Conduct Authority on April 1, 2015.¹⁶

JURISDICTION AND VENUE

26. This Court has subject matter jurisdiction over this action under 28 U.S.C. §§1331, 1332, 1337(a), and 1367(a) and pursuant to §§4 and 16 of the Clayton Act, 15 U.S.C. §§15(a) and 26.

27. Venue is proper in this District pursuant to §§4, 12 and 16 of the Clayton Act, 15 U.S.C. §§15(a), 22 and 26, and 28 U.S.C. §1391(b), (c) and (d). One or more of the Defendants resided, transacted business, were found, or had agents in this District; a substantial part of the events giving rise to Plaintiffs' claims arose in the District; and a substantial portion of the affected interstate trade and commerce described herein has been carried out in this District.

28. Each Defendant is subject to personal jurisdiction because each transacted business throughout the United States, including in this District, including by transacting in

¹⁵ Julia Sun, *UK to Criminalize Manipulation of Seven Benchmark Rates Before Election*, The Street (Sept. 25, 2014), <http://www.thestreet.com/video/12892447/uk-to-criminalize-manipulation-of-seven-benchmark-rates-before-election.html>; HM Treasury, *Chancellor confirms manipulation of key FOREX benchmark to be made a criminal offence*, Gov.uk (Dec. 22, 2014), <https://www.gov.uk/government/news/chancellor-confirms-manipulation-of-key-forex-benchmark-to-be-made-a-criminal-offense>.

¹⁶ Lianna Brinded, *FCA to regulate FX, swaps, repo, gold and oil indexes after market fixing scandals*, International Business Times (Dec. 22, 2014), <http://www.ibtimes.co.uk/fca-regulate-fx-swaps-repo-gold-oil-indexes-after-market-fixing-scandals-1480594>. See also Financial Conduct Authority, *Bringing additional benchmarks into the regulatory and supervisory regime* (Dec. 22, 2014), <http://www.fca.org.uk/news/cp14-32-additional-benchmarks>.

interest rate swaps and/or ISDAfix Transactions with members of the Class throughout the United States and in this District.

29. Defendants' activities, and those of their co-conspirators, were within the flow of, were intended to, and did, in fact, have a substantial effect on foreign and interstate commerce. During the Class Period, Defendants used the instrumentalities of interstate commerce, including interstate wires, in furtherance of their illegal conspiracy.

30. Defendants' manipulation, conspiracy, and conduct alleged herein had direct, substantial and reasonably foreseeable effects on U.S. domestic commerce, and such effects give rise to Plaintiffs' claims, within the meaning of the Foreign Trade Antitrust Improvements Act.

THE PARTIES

Plaintiffs

31. Plaintiff Alaska Electrical Pension Fund ("Alaska Fund") is a pension fund with its headquarters in Anchorage, Alaska. As reflected by the indicative examples listed in Appendix A, during the Class Period, Alaska Fund transacted in vanilla swaps and ISDAfix Transactions directly impacted by Defendants' manipulation of ISDAfix. The Alaska Fund specifically transacted on days that have been identified as being subject to manipulation with one or more Defendant Banks, including Bank of America, Barclays, B.N.P. Paribas, Citibank, Credit Suisse, Deutsche Bank, Goldman Sachs, HSBC, Morgan Stanley, Royal Bank of Scotland, and UBS. As a result, the Alaska Fund was injured by Defendants' unlawful and anticompetitive conduct.

32. Plaintiff Genesee County Employees' Retirement System ("Genesee County") is a multiple-employer defined benefit pension plan with its principal place of business in Flint, Michigan. Participating employer units include Genesee County, Genesee County Road

Commission, Genesee County Community Mental Health, Genesee County Division of Water and Waste Services, Genesee District Library, and the City of Mt. Morris. As reflected by the indicative examples listed in Appendix A, during the Class Period, Genesee County transacted in vanilla swaps and ISDAfix Transactions directly impacted by Defendants' manipulation of ISDAfix. Genesee County specifically transacted on days that have been identified as being subject to manipulation with one or more Defendant Banks, including Barclays, Citigroup, Credit Suisse, Deutsche Bank, Goldman Sachs, JPMorgan, Morgan Stanley, and RBS. As a result, Genesee County was injured by Defendants' unlawful and anticompetitive conduct.

33. Plaintiff the County of Montgomery ("Montgomery County") is a political subdivision organized and existing under the laws of the Commonwealth of Pennsylvania. As reflected by the indicative examples listed in Appendix A, during the Class Period, Montgomery County, transacted in vanilla swaps and ISDAfix Transactions directly impacted by Defendants' manipulation of ISDAfix. Montgomery County specifically transacted on days that have been identified as being subject to manipulation with one or more of the Defendant Banks, including UBS. As a result, Montgomery County was injured by Defendants' anticompetitive conduct.

34. Plaintiff the County of Washington ("Washington County") is a political subdivision organized and existing under the laws of the Commonwealth of Pennsylvania. As reflected by the indicative examples listed in Appendix A, during the Class Period, Washington County transacted in vanilla swaps or ISDAfix Transactions directly impacted by Defendants' manipulation of ISDAfix. Washington County specifically transacted on days that have been identified as being subject to manipulation with one or more of the Defendant Banks, including JPMorgan. As a result, Washington County was injured by Defendants' anticompetitive conduct.

35. Plaintiff the City of New Britain (“New Britain”) is a political subdivision organized and existing under the laws of Connecticut. As reflected by the indicative examples listed in Appendix A, during the Class Period, New Britain transacted in vanilla swaps or ISDAfix Transactions directly impacted by Defendants’ manipulation of ISDAfix. New Britain specifically transacted on days that have been identified as being subject to manipulation with one or more of the Defendant Banks, including Deutsche Bank. As a result, New Britain was injured by Defendants’ anticompetitive conduct.

36. Plaintiff UNIQA Capital Markets GmbH (“UNIQA Capital Markets”), appearing here on behalf of the fund UNIQA Dollar Bond (“UNIQA Dollar Fund”), is a corporation organized under the laws of Austria, with its principal place of business at Untere Donaustraße 21, 1029 Vienna, Austria. UNIQA Capital Markets and the UNIQA Dollar Fund are part of the UNIQA Group, which also includes Austria’s largest health insurer, one of Austria’s leading providers of life insurance, and one of Austria’s top three property and accident insurance companies. As reflected by the indicative examples listed in Appendix A, during the Class Period, UNIQA Capital Markets transacted in ISDAfix Transactions directly impacted by Defendants’ manipulation of ISDAfix. UNIQA Capital Markets specifically transacted on days that have been identified as being subject to manipulation with one or more of the Defendant Banks, including Barclays, JPMorgan (through its predecessor, Bear Sterns) and Goldman Sachs. As a result, UNIQA Capital Markets was injured by Defendants’ anticompetitive conduct.

37. Plaintiff Pennsylvania Turnpike Commission (the “Commission”) is a Component Unit of the Commonwealth of Pennsylvania with its principal place of business in Middletown, Pennsylvania. As reflected by the indicative examples listed in Appendix A, during the Class Period, the Commission transacted in swaps and ISDAfix Transactions directly impacted by

Defendants' manipulation of ISDAfix. The Commission specifically transacted on days that have been identified as being subject to manipulation with one or more of the Defendant Banks, including UBS, JPMorgan, Deutsche Bank and Bank of America. As a result, the Commission was injured by Defendants' unlawful and anticompetitive conduct.

38. Plaintiff Erste Abwicklungsanstalt ("EAA"), which is the "First Winding-up Agency" is a public law entity with its principal place of business in Dusseldorf, Germany, and registered at the Dusseldorf Local Court (Amtsgericht Dusseldorf). EAA brings its claims against Defendants for vanilla swaps and/or ISDAfix Transactions which EAA acquired from Portigon AG and for vanilla swaps and/or ISDAfix Transactions entered into by EAA. EAA has, since 2012, been winding up a trading portfolio of derivative contracts acquired from Portigon AG.

39. Plaintiff Portigon AG (f/k/a WestLB AG) is a licensed bank existing under the laws of Germany, with its principal place of business in Düsseldorf, Germany, and branch locations in New York, New York. Portigon AG entered into vanilla swaps and/or ISDAfix Transactions with numerous Defendant Banks. Numerous of these vanilla swaps and/or ISDAfix Transactions were obtained by EAA, along with all associated rights, title, interest, causes of action and claims in and related to such certificates, including all claims at issue herein. Portigon AG has standing to sue for injuries incurred during the time it held its derivative portfolio and EAA has standing to sue the Defendants to recover damages regarding vanilla swaps and/or ISDAfix Transactions entered into by Portigon AG and/or EAA. Portigon AG and/or EAA transacted in vanilla swaps and/or ISDAfix Transactions directly impacted by Defendants' manipulation of ISDAfix, and transacted with one or more of the following Defendant Banks: Nomura, UBS, HSBC, Wells Fargo, Morgan Stanley, and BNP Paribas. As a result, EAA and/or

Portigon AG were injured by Defendants' unlawful and anticompetitive conduct. A selection of indicative examples of such transactions are listed on the attached Appendix A.

Defendants

40. Defendant Bank of America, N.A. is a wholly owned subsidiary of Bank of America Corporation, a Delaware corporation, with its principal place of business in Charlotte, North Carolina, and with branch locations in New York, New York. As used herein, "Bank of America" refers to Bank of America, N.A., its subsidiaries and affiliates and, to the extent it served on the ISDAfix panel during the Class Period, Merrill Lynch Capital Services, Inc. During the Class Period, Bank of America both participated in setting ISDAfix rates and transacted in interest rate swaps and ISDAfix Transactions with Plaintiffs and members of the Class.

41. Defendant Barclays Bank PLC is a British public limited company, with its principal place of business in London, England, and with branch locations in New York, New York. As used herein, "Barclays" includes Defendant Barclays Bank PLC and its subsidiaries and affiliates. During the Class Period, Barclays both participated in setting ISDAfix rates and transacted in interest rate swaps and ISDAfix Transactions with Plaintiffs and members of the Class.

42. Defendant BNP Paribas SA is a company organized and existing under the laws of France, with its principal place of business in Paris, France, and with branch locations in New York, New York. As used herein, "BNP" includes Defendant BNP Paribas SA and its subsidiaries and affiliates. During the Class Period, BNP both participated in setting ISDAfix rates and transacted in interest rate swaps and ISDAfix Transactions with Plaintiffs and members of the Class.

43. Defendant Citigroup, Inc. is a corporation organized and existing under the laws of the State of Delaware, with its principal place of business in New York, New York. As used herein, “Citigroup” includes Defendant Citigroup, Inc. and its subsidiaries and affiliates, including Citibank N.A. During the Class Period, Citigroup both participated in setting ISDAfix rates and transacted in interest rate swaps and ISDAfix Transactions with Plaintiffs and members of the Class.

44. Defendant Credit Suisse AG, New York Branch is a branch based in New York, New York that operates as a part of Credit Suisse AG. As used herein, “Credit Suisse” includes Defendant Credit Suisse AG, New York Branch and the subsidiaries and affiliates of Credit Suisse AG. During the Class Period, Credit Suisse both participated in setting ISDAfix rates and transacted in interest rate swaps and ISDAfix Transactions with Plaintiffs and members of the Class.

45. Defendant Deutsche Bank AG is a corporation organized and existing under the laws of Germany, with its principal place of business in Frankfurt, Germany, and branch locations in New York, New York. As used herein, “Deutsche Bank” includes Defendant Deutsche Bank AG and its subsidiaries and affiliates. During the Class Period, Deutsche Bank both participated in setting ISDAfix rates and transacted in interest rate swaps and ISDAfix Transactions with Plaintiffs and members of the Class.

46. Defendant The Goldman Sachs Group, Inc. is a corporation organized and existing under the laws of the State of Delaware, with its principal place of business in New York, New York. As used herein, “Goldman Sachs” includes Defendant The Goldman Sachs Group, Inc. and its subsidiaries and affiliates, including Goldman Sachs & Co. Throughout the majority of the Class Period and until approximately June 2012, Goldman Sachs both

participated in setting ISDAfix rates and transacted in interest rate swaps and ISDAfix Transactions with Plaintiffs and members of the Class.

47. Defendant HSBC Bank USA, N.A. a wholly owned subsidiary of HSBC USA, Inc., is a Delaware corporation with its main office in McLean, Virginia. It has a principal office located in New York City. As used herein, “HSBC” refers to HSBC Bank USA, N.A., and its subsidiaries and affiliates. Throughout the majority of the Class Period and until approximately January 2013, HSBC both participated in setting ISDAfix rates and transacted in interest rate swaps and ISDAfix Transactions with Plaintiffs and members of the Class.

48. Defendant JPMorgan Chase & Co. is a corporation organized and existing under the laws of the State of Delaware, with its principal place of business in New York, New York. As used herein, “JPMorgan” includes Defendant JPMorgan Chase & Co. and its subsidiaries and affiliates, including JPMorgan Chase Bank N.A. During the Class Period, JPMorgan both participated in setting ISDAfix rates and transacted in interest rate swaps and ISDAfix Transactions with Plaintiffs and members of the Class.

49. Defendant Morgan Stanley & Co., LLC is a United States investment banking firm headquartered in New York, New York. As used herein, “Morgan Stanley” includes Defendant Morgan Stanley & Co., LLC and its subsidiaries and affiliates. Although it has since left the ISDAfix panel, during the majority of the Class Period, Morgan Stanley both participated in setting ISDAfix rates and transacted in interest rate swaps and ISDAfix Transactions with Plaintiffs and members of the Class.

50. Defendant Nomura Securities International, Inc. is a corporation organized and existing under the laws of New York, with its principal place of business in New York, New York, and a wholly owned subsidiary of Nomura Holdings America, Inc., which is a wholly

owned subsidiary of Nomura Holdings, Inc. As used herein, “Nomura” includes Defendant Nomura Securities International, Inc. and its subsidiaries and affiliates. Throughout the majority of the Class Period and until approximately October 2013, Nomura both participated in setting ISDAfix rates and transacted in interest rate swaps and ISDAfix Transactions with Plaintiffs and members of the Class. In addition to regularly transacting in vanilla swaps and cash and physically settled swaptions, Nomura’s ISDAfix Transactions with Plaintiffs and the class include, among others, the following: vanilla swaps, swaptions, constant maturity swaps, structured CMS, and other, more bespoke exotics that are linked to ISDAfix.

51. Defendant Royal Bank of Scotland plc is a corporation organized and existing under the laws of the United Kingdom, with its principal place of business in Edinburgh, Scotland, and branch locations in New York, New York. As used herein, “RBS” includes Defendant Royal Bank of Scotland plc and its subsidiaries and affiliates. Throughout the majority of the Class Period and until approximately September 2013, RBS both participated in setting ISDAfix rates and transacted in interest rate swaps and ISDAfix Transactions with Plaintiffs and members of the Class.

52. Defendant UBS AG is a corporation organized and existing under the laws of Switzerland, with its principal places of business in Basel and Zurich, Switzerland, and regional offices in New York, New York, and Stamford, Connecticut. As used herein, “UBS” includes Defendant UBS AG and its subsidiaries and affiliates. During the Class Period, UBS both participated in setting ISDAfix rates and transacted in interest rate swaps and ISDAfix Transactions with Plaintiffs and members of the Class.

53. Defendant Wells Fargo Bank, N.A., is a corporation organized and existing under the laws of the State of Delaware, and operates as a subsidiary of Wells Fargo & Co. As used

herein, “Wells Fargo” or “Wachovia” includes Wells Fargo & Co. and its subsidiaries and affiliates, including Wachovia Bank, N.A. and its successor by merger Wells Fargo Bank N.A. Throughout the majority of the Class Period and until approximately September 2013, Wells Fargo both participated in setting ISDAfix rates and transacted in interest rate swaps and ISDAfix Transactions with Plaintiffs and members of the Class.

54. Bank of America, Barclays, BNP, Citigroup, Credit Suisse, Deutsche Bank, Goldman Sachs, HSBC, JPMorgan, Morgan Stanley, Nomura, RBS, UBS, and Wells Fargo are referred to collectively herein as the “Defendant Banks.”

55. Defendant ICAP Capital Markets LLC (“ICAP”), a subsidiary of ICAP plc, is a Delaware limited liability company with its headquarters in Jersey City, New Jersey. As used herein, “ICAP” includes Defendant ICAP plc and its subsidiaries and affiliates. During the Class Period and until January 26, 2014, ICAP served as the administrator for the setting of the USD ISDAfix rate and as a broker for billions, if not trillions, of dollars of interest rate derivatives and other transactions.

56. Whenever reference is made in this Complaint to any act, deed, or transaction of any entity, the allegation means that the corporation engaged in the act, deed, or transaction by or through its officers, directors, agents, employees, or representatives while they were actively engaged in the management, direction, control, or transaction of the entity’s business or affairs.

57. Various other non-parties also participated as co-conspirators, performed acts, and made statements in furtherance of the conspiracy. Plaintiffs reserve the right to identify other co-conspirators and to name subsequently some or all co-conspirators, whether identified here or not, as defendants.

58. Defendants are jointly and severally liable for the acts of their co-conspirators whether named or not named as Defendants in this complaint. Each Defendant acted as the agent or co-conspirator of or for the other Defendants with respect to the acts, violations, and common course of conduct alleged herein.

FACTUAL ALLEGATIONS

I. BACKGROUND ALLEGATIONS

A. Interest Rate Derivatives and ISDAfix Transactions

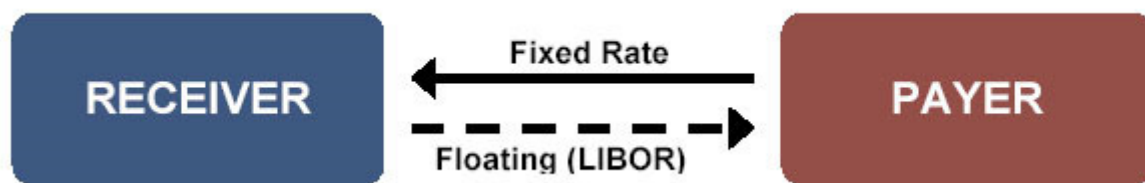
59. A derivative is a financial instrument, the value of which depends on the value of another underlying asset, such as a stock, bond, or commodity, or on a rate paid on underlying assets, such as an interest rate. Derivatives permit market participants to manage and transfer risk by allowing parties to separate out and trade individual risk components, such as interest rate risk.

60. The largest derivatives market in the world is the interest rate derivatives market. The simplest and most common type of interest rate derivative is the interest rate swap, which is a transaction in which two parties – commonly referred to as “counterparties” – exchange interest rate payments on an agreed notional amount for a fixed period of time. Typically, one party will pay based on a “fixed” interest rate on the notional amount that does not vary from one payment to the next, while the other party will pay based on a variable “floating” interest rate that is tied to an independent benchmark such as LIBOR.¹⁷ The fixed rate payer can also be

¹⁷ LIBOR is a benchmark interest rate. It is supposed to represent the average interest rate, estimated by leading banks, that one bank would be charged when borrowing from another bank. Much like ISDAfix, LIBOR is important for determining the value of a wide variety of derivatives. Several Defendants – most notably Barclays, RBS, UBS and ICAP – were found by American and British regulatory agencies to have manipulated LIBOR. *See, e.g.,* CFTC Press Release, *CFTC Orders Barclays to pay \$200 Million Penalty for Attempted Manipulation of and False Reporting concerning LIBOR and Euribor Benchmark Interest Rates*, CFTC.gov (June. 27,

called the floating rate receiver and is often referred to as having bought the swap or having a “long” position. Conversely, the floating rate payer can also be called the fixed rate receiver and is referred to as having sold the swap and having a “short” position.

61. The following diagram illustrates a typical interest rate swap transaction. Here, the receiver pays the floating LIBOR rate to the payer, and the payer pays a fixed rate to the receiver:



A fixed-for-floating rate swap allows parties with floating rate debt to hedge their interest rate exposure by receiving a variable rate on the notional amount in exchange for paying a fixed rate on that same notional amount.

62. For example, when an entity (*e.g.*, a company, fund, public entity, or pension fund) issues floating rate debt, it may seek to avoid interest rate risk by hedging the floating rate obligation. The debt issuer can enter into interest rate swaps with one or more banks. Under the

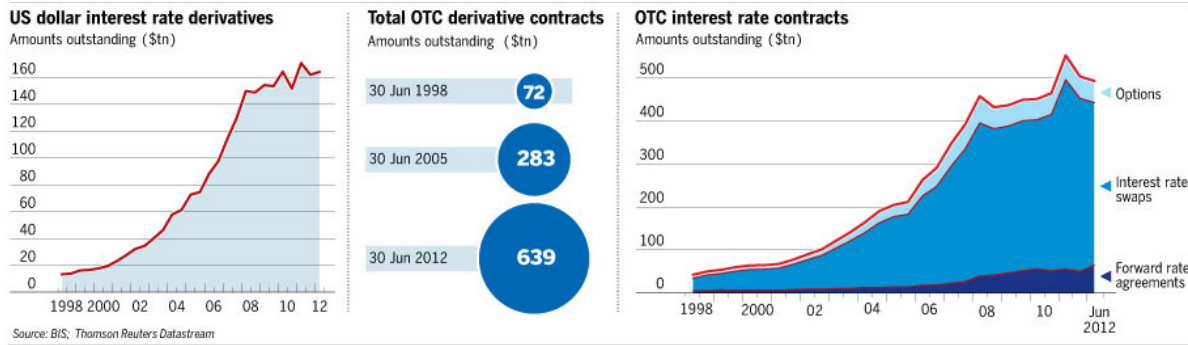
2012), <http://www.cftc.gov/PressRoom/PressReleases/pr6289-12>; UBS Press Release, *UBS Board of Directors authorizes settlements of LIBOR-related claims with US and UK authorities; Swiss regulator to issue order*, UBS.com (Dec. 19, 2012) http://www.ubs.com/kr/en/about-us/korea_newsdisplay.html/en/2012/12/19/20121219a.html; CFTC Press Release, *CFTC Orders The Royal Bank of Scotland plc and RBS Securities Japan Limited to Pay \$325 Million Penalty to Settle Charges of Manipulation, Attempted Manipulation, and False Reporting of Yen and Swiss Franc LIBOR*, CFTC.gov (Feb. 6, 2013), <http://www.cftc.gov/PressRoom/PressReleases/pr6510-13>; Department of Justice Press Release, *ICAP Brokers Face Felony Charges for Alleged Long-Running Manipulation of LIBOR Interest Rates*, Justice.gov (Sept. 23, 2013), <http://www.justice.gov/opa/pr/icap-brokers-face-felony-charges-alleged-long-running-manipulation-libor-interest-rates>. The investigation into other participants in the LIBOR scandal, including other Defendant Banks, is ongoing.

swap, the bank assumes an obligation to pay the issuer a floating rate (which changes over time) in exchange for the issuer assuming an obligation to pay a pre-determined fixed rate to the bank. If the floating rate exceeds the fixed rate, the bank, as floating rate payer, pays the issuer. On the other hand, if the floating rate index is less than the fixed rate, the issuer, as the fixed rate payer, pays the bank. Fixed rate and floating rate payments are netted against each other with a payment made by the party owing the larger amount on the specified scheduled payment dates.

63. Over the past three decades, interest rate derivatives and, specifically, interest rate swaps have proliferated. ISDA, a trade association for the over-the-counter derivatives markets, estimates that the collective notional amounts on interest rate swaps was approximately \$2.3 trillion in 1990. By 2009, that figure had grown to over \$450 trillion. As of June 2012, according to the Bank for International Settlements, the notional amounts outstanding were \$494 trillion for over-the-counter interest rate transactions and \$342 trillion for over-the-counter interest rate swaps, including \$164 trillion of U.S. dollar swaps.¹⁸

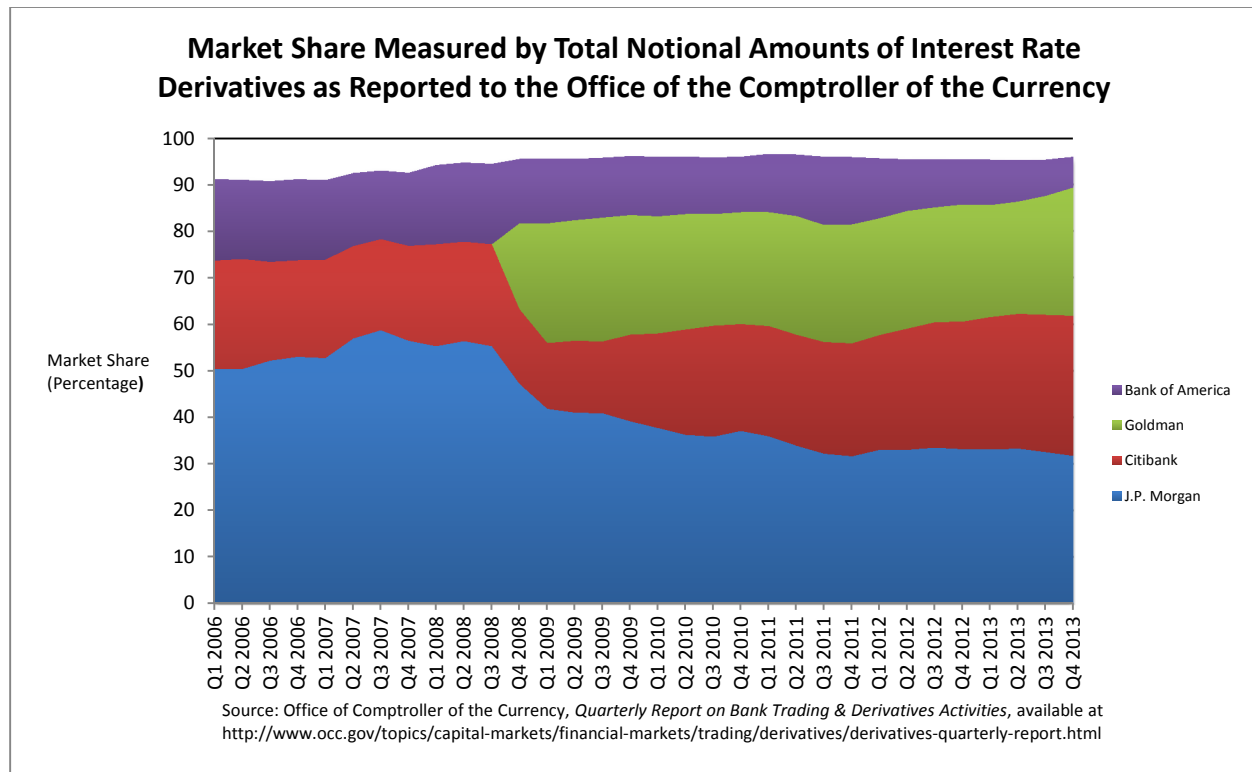
64. The following charts published by the *Financial Times* in April 2013, when news of the ISDAfix conspiracy first broke, demonstrate the magnitude of the market for interest rate derivatives and its rapid growth since 1998:

¹⁸ Michael Mackenzie, Tom Braithwaite & Kara Scannell, *Swap traders' morning fix under scrutiny*, Financial Times (Apr. 9, 2013), <http://www.ft.com/intl/cms/s/0/ddbebb32-a11d-11e2-bae1-00144feabdc0.html#axzz2x74uiRT6>.



65. The growth of this market has been concentrated in many of Defendant Banks, which individually and collectively maintain huge portfolios of derivatives. During the Class Period, the Office of the Comptroller of the Currency (OCC) collected data on reporting banks' derivatives activities and published quarterly reports. The OCC's data includes reports from between 800 and 1,400 banks, and yet a small group of Defendant Banks were responsible for the vast majority of interest rate derivatives. Over the course of the entire Class Period, the collective interest rate derivatives holdings of Defendants Bank of America, Goldman Sachs, Citibank, and JPMorgan represented over 90% of the reported outstanding total notional amount of interest rate derivatives held by U.S. dealers that report to the OCC, as shown by the graph below:¹⁹

¹⁹ The OCC did not start tracking interest rate derivatives holdings for Defendant Goldman Sachs until the fourth quarter of 2008.



66. According to the Office of the Comptroller of the Currency's *Quarterly Report on Bank Trading and Derivatives Activities – Fourth Quarter 2013*, a substantial portion of the Defendant Banks' derivatives contracts were concentrated in interest rate derivatives. For example, 77.6% of JPMorgan's derivatives contracts concerned interest rates; for Citigroup, the total was 83.7%; for Goldman Sachs, the total was 95%; for Bank of America, the total was 79.8%; for HSBC, the total was 73.9%; and for Wells Fargo, the total was 90.7%.²⁰

67. As the market for interest rate derivatives has grown, so too has the variety of these investments. Another common interest rate derivative is the swaption. According to the Depository Trust & Clearing Corp., the value of swaption contracts outstanding as of July 26, 2013 was \$29.5 trillion as measured by notional amount. In a swaption, instead of swapping

²⁰ Office of Comptroller of the Currency, *OCC's Quarterly Report on Bank Trading & Derivatives Activities Fourth Quarter 2013*, Table 3.

interest rates on the date of the transaction, the parties negotiate an option to enter into an interest rate swap in the future. Thus, a swaption is a contract wherein the buyer of the swaption pays the seller a premium for the option, but not the obligation, to enter an interest rate swap contract with the seller on a future. The swaption spells out all of the terms of the underlying potential swap, including the length of the swap, the notional amount, the rates for each party, the dates on which payments are due (the “settlement dates”), and how often such payments are due (the “settlement periods”), as well as the premium the buyer of the swaption must pay and when the option may be exercised.²¹

68. When entering a swaption, the parties may choose for the swaption to be *physically settled* or *cash settled*. For pricing, valuation and risk exposure purposes, there is no difference between a swaption that cash-settled and one that is physically settled. Only at the expiry of the option leg of an “in-the-money” swaption will an exercised physically settled swaption begin to exhibit more risk exposure as a result of the underlying swap, whereas the cash-settled swaption simply terminates after cash settlement.

69. A physically settled swaption, if exercised, results in the parties entering into the underlying swap. Industry-standard documentation provides that such swaptions would automatically be exercised if the relevant ISDAfix rate met or exceeded a certain rate on the exercise date. For example, under the 2006 ISDA Definitions, a physically settled swaption may be specified as “Automatic Exercise” such that the swaption will, subject to certain conditions,

²¹ In a “payer swaption,” the buyer of the swaption is the party expected to pay the fixed interest rate. In a “receiver swaption,” the buyer of the swaption is the party expected to receive the fixed interest rate.

be “deemed to be exercised” at the expiration time on the expiration date if the buyer is in-the-money against a given ISDAfix rate.²²

70. In a cash-settled swaption, the seller of the swaption (the party selling the right to swap a floating rate for a fixed rate) pays the buyer, on the exercise date, the positive market value of the right, if any. This is known as the “expiry value.” At exercise, a cash-settled swaption is either “in-the-money” or “out-of-the-money.” A cash-settled swaption is valued by comparing the fixed rate in the swaption’s underlying swap transaction to the fixed rate available on the market for an equivalent swap. If the buyer is “in-the-money,” the seller simply pays the buyer the difference in value between the underlying swap transaction and an equivalent swap transaction available on the open market on the exercise date.

71. ISDAfix is the benchmark rate that the financial community, including Defendant Banks, almost always use to settle cash-settled swaptions.²³ Indeed, ISDAfix is the benchmark nominated to be the default rate by ISDA in the 2000 and 2006 ISDA Definitions, which provide standardized definitions setting the terms for interest rate and currency derivatives transactions. Thus, on the exercise date, the parties to a swaption compare the swaption’s fixed rate to the comparable ISDAfix rate on that date to determine whether the swaption is in-the-money, and, if it is, how much it is worth.

72. Cash-settled swaptions are typically valued by calculating the present value of future cash flows on the exercise date. The fixed rate specified by the swaption contract is compared to the current ISDAfix rate on the exercise date to determine the value of the net future

²² See ISDA, *2006 ISDA Definitions*, Section 13.7.

²³ In the case of USD 1-year swaptions, for which an ISDAfix rate was set at both 11:00 a.m. and 3:00 p.m., the 11:00 a.m. rate was used to determine the “expiry value.”

payments under the two swaps. The net future payments are then discounted to present value, again using the then current ISDAfix rates.

73. A payer swaption is in-the-money if the fixed rate available in the market is higher than the swaption's fixed rate, because the buyer of that swaption would be making lower fixed payments than the market rate. A receiver swaption is in-the-money if the fixed rate available in the market is lower than the swaption's fixed rate, because the buyer of that swaption would be receiving higher fixed payments than the market rate.

74. If the swaption is in-the-money, then the swaption's value will increase the further the swaption's fixed rate is from the ISDAfix rate. Therefore, accurate calculation and reporting of the ISDAfix rate is critical to the fair settlement of swaptions, and even the smallest movement of ISDAfix can drastically affect the value of a cash-settled swaption.

75. In addition to some interest rate swaps²⁴ and swaptions, ISDAfix Transactions include many other financial instruments that use or make reference to the ISDAfix benchmark rate, including swapnote futures, constant maturity swaps, cash-settled swap futures, "steepeners," "inverse floaters," and "snowballs," digital and callable range accrual notes, and variance and volatility swaps, among others. The U.S. Federal Reserve uses ISDAfix as the source for USD swap rates in its Statistical Release H.15, and banks use ISDAfix rates to value their own portfolios, which are then incorporated into the banks' reported financial results. ISDAfix rates may also be used to price commercial real estate mortgages and various types of structured bonds and notes. Finally, both the Chicago Mercantile Exchange and the Chicago Board of Trade use ISDAfix as the settlement price in their swap futures contracts.

²⁴ Though most "vanilla" swaps use LIBOR to determine the floating-rate amount, as outlined above, not all do. Plaintiffs and members of the Class have swaps whose "floating" payment streams were tied to USD ISDAfix rates.

76. With the exception of swap futures, all of these ISDAfix Transactions (and vanilla swaps) were transacted in the over-the-counter market during the Class Period, meaning that there was no centralized and regulated exchange. In the over-the-counter market, inter-dealer brokers – such as Defendant ICAP – exist to provide liquidity to the market, facilitate information flow by providing a centralized hub for bids and offers, and to improve market efficiency by rapid matching of buyers and sellers. Inter-dealer brokers are well compensated by receiving a commission on the deals they create through matching a buyer and a seller.

77. In selecting an inter-dealer broker to facilitate interest rate derivative transactions, market participants have few options. In the over-the-counter interest rate derivatives market, five inter-dealer brokers “dominate the landscape,”²⁵ and ICAP has consistently asserted that it is the leader of this market. In 2007, ICAP declared itself the leader of the interdealer broker market by global revenue, and estimated its own market share as 30-31%.²⁶ In 2014, ICAP claimed “the highest market share by total notional volume traded in interest rate derivatives products” on its new, regulated swap execution facility. ICAP claimed a 59% market share in interest rate derivative products, and noted that such products “represent the largest asset class by notional volume[.]”²⁷ The interest rate derivatives market is highly active and profitable for inter-dealer brokers like ICAP. During the Class Period, ICAP brokered approximately \$1.4 *trillion* in interest rate swaps *every day*.

²⁵ *Interdealer brokers: the firms that connect buyers and sellers in wholesale markets are under the cosh*, The Economist (Nov. 17, 2012), <http://www.economist.com/news/finance-and-economics/21566651-firms-connect-buyers-and-sellers-wholesale-markets-are-under>.

²⁶ ICAP, *Annual Report for the year ended 31 March, 2007* at 20, <http://www.icap.com/~media/Files/I/Icap-Corp/Annual%20Reports/annual-report2007.pdf>.

²⁷ ICAP, *Annual Report for the year ended 31 March, 2014* at 21, <http://www.icap.com/~media/Files/I/Icap-Corp/Annual%20Reports/annual-report2014.pdf>

78. During the Class Period, ICAP also controlled interest rate swap prices on a Reuters electronic screen service known as Screen 19901. Screen 19901 publicized the bid/offer rates of all swap transactions of the specified terms executed through ICAP, and was updated periodically throughout the day by ICAP as trades were executed. Screen 19901 was subscribed to by around 6,000 companies, financial firms, and other market participants who relied upon its data to value interest rate swaps, swaptions, and other financial products.

79. David Kelly, who helped design the underlying analytics of Screen 19901 in the early 2000s, stated “[t]hat screen is critical. That screen makes or breaks a lot of profit and loss, so clearly there’s a lot of opportunity for influence.”²⁸ Thus, ICAP’s control of Screen 19901 and exclusive role as the source of swap interest rates on Screen 19901, and the collector of USD ISDAfix rates submissions combined with Defendant Banks’ substantial portfolios of interest rate derivatives and other ISDAfix Transactions created the perfect storm to enable and motivate Defendants to manipulate ISDAfix.

B. The Purported Process of Setting ISDAfix

80. As described above, ISDAfix is a key benchmark rate for a broad range of interest rate derivatives and other financial instruments. ISDA established ISDAfix in 1998 to serve as a benchmark of fixed swap rates. ISDAfix was intended to be a benchmark for average swap rates on a daily basis and was developed “to facilitate the determination of exercise values for cash-settled swap options.”²⁹ ISDAfix was supposed to provide “a transparent, readily available value and settlement rate.” Without ISDAfix, an over-the-counter derivatives market participant

²⁸ Matthew Leising, *CFTC Said Probing ICAP on Swap Price Allegations: Credit Markets*, Bloomberg (Apr. 9, 2013), <http://www.bloomberg.com/news/2013-04-09/cftc-said-probing-icap-on-swap-price-allegations-credit-markets.html>.

²⁹ Intercontinental Exchange, *ISDAFIX*, <https://www.theice.com/iba/isdafix#contributors-users> (last visited Feb. 11, 2015).

would have to call multiple other market participants to value, for example, a swaption upon cash exercise. This is because the over-the-counter derivatives market did not have a centralized exchange where market prices were readily available. Thus, ISDAfix was often the only available reference for parties looking to settle interest rate options, cancel swaps contracts, and value other financial instruments. Indeed, the 2000 and 2006 ISDA Definitions establish ISDAfix as a default benchmark for calculating the value of a cash-settled swaption.

81. There are multiple varieties of ISDAfix rates for transactions of varying length in different currencies. While some ISDAfix rates are no longer currently reported, there have been rates published for the Euro, the British Pound Sterling, the Hong Kong Dollar, the Japanese Yen, the Swiss Franc, and the U.S. Dollar. The length or tenors of swaps with an ISDAfix rate range from one-year swaps to 30-year swaps. All published ISDAfix rates are expressed as a percentage to three decimal places, such as 3.202%, and Defendants as contributing banks submitted rates running to five decimal places.

82. These rates are then distributed to market participants who subscribe to five electronic screen services operated by Reuters, called ISDAFIX 1 – ISDAFIX 5. These screens are subscribed to by thousands of market participants and display that day's ISDAfix rates. For example, ISDAFIX 3 displays the USD swap rates and swap spreads, while ISDAFIX 4 displays the rates for swaps in British Pounds Sterling and Swiss Francs. An ISDAfix rate is calculated either once or twice a day, depending on the currency and maturity. While the final ISDAfix rates are published, the Defendant Banks' individual submissions are not. That information is tightly controlled by Thomson Reuters and ICAP.

83. During the Class Period, there were two parties responsible for administration of the ISDAfix benchmark fixing process: Defendant ICAP, which calculated all USD rates, and Thomson Reuters, which was responsible for all other rates.³⁰

84. The ISDAfix rate is supposed to represent the average fixed interest rate that an over-the-counter derivatives dealer would bid or offer for a swap of a certain tenor and currency in exchange for a specified floating LIBOR rate (*e.g.*, 3-month LIBOR). In ISDA's own words:

How does ISDAFIX fix?

Rate Definition.

The contributor is asked to provide a rate which is the mean of where *that dealer would itself offer and bid a swap* in the relevant maturity for a notional equivalent amount of US \$50 million or whatever amount is deemed market size in that currency for that tenor to an acknowledged dealer of good credit in the swap market. *The rate should not be where the dealer sees mid-market away from itself, but should be a function of its own bid/offer spread.*³¹

85. Thus, the rules governing ISDAfix required the banks to make submissions to ICAP based on their own, personal bid/offer spreads. This is not changed by ISDA's 2012 letter to the European Commission's Public Consultation on the Regulation of Indices (the "ISDA/European Commission Letter"). In response to the questions: "Who in your sector submits data for inclusion in benchmarks? What are the current eligibility requirements for benchmarks' contributors?," ISDA responded with respect to ISDAfix rates:

ICAP collects spread information from contributors via a secure website that contributors log into every morning. Contributors are asked to indicate the USD swap spread as of 11:00 am, *in accordance with the criteria set by ISDA* At 10:58 am, ICAP will send an email reminder to each contributor reminding them to contribute. At 11:02 am, ICAP will indicate on the secure website a USD swap

³⁰ In 2014, ISDA stripped ICAP of its ISDAfix duties, most likely in reaction to the investigation and allegations regarding ICAP and Defendant Banks' rigging of the ISDAfix rate.

³¹ ISDA, *How does ISDAFIX fix?, Rate Definition*, <https://web.archive.org/web/20120630173533/http://www2.isda.org/asset-classes/interest-rates-derivatives/isdafix> (emphasis added).

spread and USD swap rate to serve *as a reference point for contributors*. This reference point is generated from two sources of information:

- (1) Information contained on Reuters page 19901 at 11:00 am, which reflects the most recent swap spreads from completed trades and executable bids and offers in market size done/posted at ICAP.
- (2) Information reflecting executed trades and executable bids and offers at 11 a.m. for US Treasury securities from ICAP's BrokerTec US Treasury electronic trading platform.

By their nature, because both sources of information reflect completed transactions and/or at-risk trading interest, ICAP considers them to be a useful and meaningful reference point for where the market may be at that point in time.

From 11:00 am to 11:15 am, contributors are able to submit *their* swap spread information and *rate* to the secure website. In terms of process, contributors may accept the reference swap spread and/or rate indicated on the website, or submit different values. During this time the ICAP swaps desk monitors dealer participation to ensure that the 10-bank minimum is met. As contributors submit spread and rate information, the values are sent to Thomson Reuters on a streaming basis.

At 11:26 am, Thomson Reuters will calculate the USD ISDA FIX rate by eliminating a given number of the highest and lowest rates submitted, and then by calculating a simple average of the remaining rates. A rate will be posted as long as the Minimum Number of Contributions is received.³²

86. Thus, Defendant Banks could “accept the reference . . . rate.” But even ISDA's post-hoc explanations make clear that that rate was just that, only a “reference point.” “Contributors” are still required to abide by the definition of ISDAfix itself, *i.e.*, submissions were supposed to still reflect “their . . . rate.” Thus, in line with ISDAfix's definition, contributing banks were to respond with “the rate which is the mean of where that [Defendant] would itself offer and bid a swap,” a function “of [that Defendant's] own bid/offer spread.” A

³² ISDA, *ISDA Response to the European Commission's Public Consultation on the Regulation of Indices*, at 7 (Nov. 29, 2012), <http://www2.isda.org/news/isda-response-to-the-european-commissions-public-consultation-on-the-regulation-of-indices> (emphasis added).

Defendant Bank was to “accept” ICAP’s reference rate *if and only if* the reference rate *exactly* matched the mean of its own *bank-specific* spreads.

C. Government Investigations Reveal the Extent of Collusion Between Defendants in Manipulating Financial Benchmarks

87. Government investigations into the manipulation of ISDAfix are, in part, an outgrowth of cooperation agreements reached in the earlier investigations of and prosecutions in the LIBOR scandal. Following revelations regarding manipulation of LIBOR, regulatory agencies began to focus on whether the banks responsible for the LIBOR benchmark had colluded to illicitly profit. The investigations resulted in both criminal and regulatory charges, and were coordinated between agencies from the United States, the United Kingdom, Canada, Japan, and the European Union.

88. While they are still ongoing, the LIBOR investigations have already turned up emails and other evidence proving that certain Defendants and others colluded to submit false rates to drive the LIBOR benchmark in whichever direction would benefit them the most. This evidence showed that swap traders at a Defendant Bank would tell their colleagues in charge of sending the rate submissions which rate would make the Defendant Bank the most money that day. This paper trail, along with other evidence, eventually led to enormous fines and settlements for Defendants Barclays, UBS, and others.

89. On December 19, 2012, the scandal widened when, for the first time, it was revealed that LIBOR manipulation was not restricted to co-workers at Defendant Banks, but involved third-party dealers and brokers. This revelation occurred in connection with UBS’s settlement agreement, wherein UBS agreed to pay fines three times that of Barclays for its role in manipulating the LIBOR rate.

90. UBS's settlement "exposed the systemic problems with the rate-setting process."³³ According to Tracey McDermott, the enforcement director for the U.K. Financial Services Authority ("FSA"), UBS ignored "[t]he integrity of benchmarks [which] are of fundamental importance to . . . international financial markets." The UBS settlement exposed the illicit profit certain Defendants had gained, and prompted criminal investigations and arrests. Banks had previously expected to face fines, almost as a cost of doing business, but now the U.S. Department of Justice had extracted a guilty plea by UBS's Japanese subsidiary to wire fraud, and indicted some of the bank's senior traders.

91. Defendant ICAP was at the center of the LIBOR scandal, and paid \$87 million to settle U.S. investigations into its conduct. ICAP was found to have "knowingly disseminated false and misleading information concerning Yen borrowing rates to market participants in attempts to manipulate, at times successfully, the official fixing of the daily Yen LIBOR."³⁴ ICAP and its clients, most noticeably UBS, worked together to hide their collusion from the rest of the market.

92. Following UBS's settlement, updates about the breadth of ongoing investigations continued throughout 2013. With each report, the scope of the benchmark-setting corruption investigations became broader. Having seen the banks' corruption of one key financial measurement, regulators were not content to presume they were trustworthy with respect to others. For instance, regulatory agencies have explicitly stated that their investigation into

³³ Mark Scott and Ben Protess, *As Unit Pleads Guilty, UBS Pays \$1.5 Billion Over Rate Rigging*, New York Times (Dec. 19, 2012), http://dealbook.nytimes.com/2012/12/19/as-unit-pleads-guilty-ubs-pays-1-5-billion-in-fines-over-rate-rigging/?_php=true&_type=blogs&_r=0.

³⁴ CFTC, *CFTC Charges ICAP Europe Limited, a Subsidiary of ICAP plc, with Manipulation and Attempted Manipulation of Yen Libor* (Sept. 25, 2013), <http://www.cftc.gov/PressRoom/PressReleases/pr6708-13>.

ICAP's wrongdoing is not limited to its manipulation of Yen LIBOR, with Mythili Raman, head of the Justice Department's criminal division, stating "We're not done."³⁵

93. By the time ICAP settled the investigation into its role in manipulating Yen LIBOR, the CFTC had already turned its attention to ISDAfix. The U.K. Financial Conduct Authority has given its ISDAfix investigation "formal status," signifying that it is conducting its own full investigation rather than merely assisting the CFTC. The investigation into ISDAfix is turning up the same sort of incriminating evidence as was uncovered in the context of LIBOR: emails, telephone records, and other evidence showing bank traders and brokers working together with the express goal of moving the ISDAfix rate in order to profit from their derivatives positions. Many of the Defendants that signed settlement agreements over their role in LIBOR are required to cooperate with the investigations into ISDAfix as part of that settlement, and face criminal prosecution should they withhold any evidence.

94. In April 2013, it came to light that the CFTC had issued its first round of ISDAfix-related subpoenas. The CFTC is said to be sifting through over one million emails and instant messages, as it simultaneously interviews current and former employees of banks, dealers, and ICAP as part of its ISDAfix investigation. In regulatory reports, ICAP confirmed that "the US CFTC has requested information in relation to [ICAP's] role in the setting of the US dollar segment of a benchmark known as ISDAFIX which could also result in a formal investigation, claims or penalties as well as incurring further legal costs."³⁶

³⁵ David Enrich, Jean Eaglesham, and Devlin Barrett, *ICAP Is Fined \$87 Million in Libor Scandal*, Wall Street Journal (Sept. 25, 2013), <http://online.wsj.com/news/articles/SB10001424052702303342104579096942161083458>.

³⁶ ICAP Group Holdings plc, *Issue of EUR 350,000,000 3.125 per cent. Notes due March 2019 under the £1,000,000,000 Global Medium Term Note Programme* (Mar. 4, 2014), <http://www.icap.com/~media/Files/I/Icap-Corp/pdfs/002%20Final%20Terms.pdf>.

95. UBS, RBS, Barclays, Citibank, and Goldman Sachs have all similarly admitted in their regulatory filings to being subject to ISDAfix investigations, including having “ongoing obligations” to cooperate with such investigations. Indeed, it is now standard for instruments that use ISDAfix as a benchmark to include a warning notifying investors of the investigation into the ISDAfix manipulation.³⁷ And tellingly, as of February 16, 2015, ISDAfix was no longer set by a reference rate and submission process under the exclusive control of Defendants. Instead, in a move described as “an important step in ensuring market confidence in the integrity of the rate” by the ISDAfix administrator who replaced Defendant ICAP in 2014, the rate is now set by “tradable quotes provided by counterparties and order book data on regulated electronic trading venues.”³⁸

96. On September 9, 2014, Bloomberg reported that the CFTC had “told the U.S. Justice Department they’ve found evidence of criminal behavior following an investigation into banks’ alleged manipulation of ISDAfix[.]”³⁹ The article stated that the CFTC “which first sent subpoenas to the world’s largest banks in November 2012 to determine whether ISDAfix was rigged, has flagged its findings to prosecutors, according to a person familiar with the matter.”

³⁷ For instance, one offering document discloses: “It has been reported that the U.K. Financial Conduct Authority and the U.S. Commodity Futures Trading Commission are working together to investigate potential manipulation of ISDAfix. If such manipulation occurred, it may have resulted in this rate or the quarterly difference in such rate being artificially lower (or higher) than it would otherwise have been. Any changes or reforms affecting the determination or supervision of ISDAfix in light of these investigations, may result in a sudden or prolonged increase or decrease in reported ISDAfix or the quarterly difference in ISDAfix, which could have an adverse impact on the trading market for ISDAfix-benchmarked securities such as your notes, the value of your notes and any payments on your notes.” Jan. 12, 2015 Goldman, Sachs & Co. Preliminary Prospectus Supplement (Registration Statement No. 333-198735) at S-6, <http://www.sec.gov/Archives/edgar/data/886982/000119312515008369/d850903d424b2.htm>.

³⁸ Financial Times, *ICE changes Isdafix interest rate swap basis* (Jan. 26, 2015), <http://www.ft.com/fastft/267592/ice-changes-isdafix-interest-rate-swap-benchmark>.

³⁹ Leising and Schoenberg, *supra* note 2.

97. All of this regulatory scrutiny over the ISDAfix rates caused ISDA to hire the consulting firm Oliver Wyman – the same firm retained by the British Bankers Association in connection with the LIBOR scandal – to make recommendations on how to modify the interest rate swap pricing process.

98. It was not until regulatory scrutiny increased in 2013 and 2014 that ISDA began the process of replacing ICAP in the setting of USD ISDAfix rates. ISDA spokesperson Steven Kennedy stated in January 2014 that ISDA removed ICAP from its role as collector of the USD ISDAfix rates and turned over the collection and calculation of those rates to Thomson Reuters.

99. In a press release, ISDA announced the implementation date for the “first stage in its two-phased process for moving to an automated, market-based ISDAFIX rate setting.”⁴⁰ The first phase includes a number of initiatives “to enhance the ISDAFIX polling process in response to the International Organization of Securities Commissions (IOSCO) Principles for Financial Benchmarks.” In addition to replacing ICAP with Thomson Reuters, ISDA announced the following initiatives in connection with its first phase:

- a) Clarifying the definition of ISDAfix to emphasize that contributing banks should use executable bid/offer rates. The definition includes a table referencing typical contract sizes for each ISDAFix tenor in order to provide a reference point for all banks and ensure consistency.
- b) Establishing an ISDAfix Code of Conduct and an ISDA Oversight Committee to address internal governance, systems, and controls in order to maintain the

⁴⁰ ISDA, Press Release, *ISDA Announces Key Steps in ISDAFIX Transition* (Jan. 27, 2014), <http://www2.isda.org/news/isda-announces-key-steps-in-isdafix-transition>.

highest standards for ISDAfix and the contributing banks, as well as ensuring compliance with the IOSCO Principles for Financial Benchmarks.

- c) Identifying, suspending, and/or discontinuing currencies and tenors of ISDAfix with insufficient liquidity in the underlying swap market. For example, ISDA suspended EUR LIBOR and JPY ISDAfix in January 2014.
- d) Implementing stronger ex-ante and ex-post checks and analysis of bank submissions by the calculation agent and by the contributing banks in order to validate individual submissions.

100. The second stage of ISDA's reforms "includes moving from the current bank submission-based method to an automated model that utilizes live prices from multilateral trading facilities (MTFs)." ISDA stated its intention to transition to an "MTF submission-based approach i[n] the second quarter of this year [2014] for euro swaps, with the US dollar and sterling swaps following later in 2014 or early 2015." Such an approach would lessen the possibility of contributor banks conspiring to manipulate ISDAfix rates.

101. In late February 2014, ISDA stated that it was soliciting offers from companies seeking to become the new benchmark administrator for ISDAfix. The winning bidder would be responsible for collecting the data, checking its integrity, and calculating the ISDAfix Rates.⁴¹

102. In August 2014, ISDA officially announced ICE Benchmark Administration ("IBA") as the new ISDAfix administrator. In a press release, ISDA stated that the IBA formally "took on its responsibilities as benchmark administrator and calculation agent for ISDAFIX in

⁴¹ Gavin Finch, *ISDA Puts Out to Tender Role of ISDAFIX Benchmark Administrator*, Bloomberg (Feb. 24, 2014), www.bloomberg.com/news/2014-02-24/isda-puts-out-to-tender-role-of-ISDAFIX-benchmark-administrator.html.

US dollar, euro, British pound and Swiss franc from August 1, 2014.”⁴² Implicitly acknowledging the flaws in the former ISDAfix setting process, ISDA stated that “[a]s administrator, IBA will oversee a move from a polled submissions model, where contributing banks submit price estimates, to a methodology based on actual transactions and/or executable quotes posted on regulated trading venues.” ISDA stated that starting in February 2015 the manner in which ISDAfix is calculated would change – shifting from submissions by a panel of banks to published rates based on tradeable quotes – in an effort “to bolster market confidence.”⁴³ To avoid the stigma attached to the “ISDAfix” name, and to reflect the new administrator, the benchmark was renamed the “ICE Swap Rate” in April 2015.⁴⁴

103. On February 4, 2015, it was reported that ICAP had been fined \$17 million by the European Commission’s competition authority for “breach[ing] antitrust laws by facilitating attempts by several banks to rig a benchmark interest rate.”⁴⁵ The European Commission also accused ICAP “of disseminating misleading information to banks that weren’t part of a cartel of banks trying to influence the yen Libor, saying the information was veiled as ‘predictions’ or ‘expectations’ of where the rate would be set” and of “using its contacts at other banks in an attempt to influence their submissions and serving as a communications channel between traders

⁴² ISDA, Press Release, IBA Assumes ISDAFIX Administrator Role (Aug. 4, 2014).

⁴³ See Philip Stafford, *ICE to change Isdafix calculation*, Financial Times (Jan. 26, 2015), www.ft.com/intl/cms/s/0/e778d3d6-a56e-11e4-ad35-00144feab7de.html#axzz3QGnQh9M8.

⁴⁴ See “ICE Benchmark Administration Completes Transition to New ISDAFIX Calculation Methodology; Benchmark Renamed ICE Swap Rate”, BusinessWire (Apr. 1, 2015), <http://www.businesswire.com/news/home/20150401005074/en/ICE-Benchmark-Administration-Completes-Transition-ISDAFIX-Calculation>.

⁴⁵ See Chad Bray, *European Authorities Fine ICAP \$17 Million in Libor Investigation*, New York Times (Feb. 4, 2015), <http://dealbook.nytimes.com/2015/02/04/european-authorities-fine-icap-17-million-in-libor-investigation/>.

at Citigroup and at R.B.S., assisting in their anticompetitive behavior.”⁴⁶ In other words, as alleged to have also have occurred here, ICAP was willingly and actively facilitating coordination among multiple benchmark-setting banks.

104. In May 2015, Barclays reached an agreement with the CFTC to pay \$115 million for alleged manipulation of ISDAfix.⁴⁷ In May 2016, Citibank reached a similar agreement with the CFTC, agreeing to pay \$250 million for alleged manipulation of ISDAfix.⁴⁸ The CFTC found Barclays and Citi had “attempted on many occasions to manipulate [ISDAfix]”.⁴⁹

105. In December 2016, the CFTC reached a \$120 million settlement with Goldman Sachs after finding that it had used multiple methods to manipulate ISDAfix between January 2006 and June 2012,⁵⁰ including (i) “banging the close” through its swaps broker to set ISDAFix rates where they would benefit Goldman Sachs’ settling/resetting derivatives positions (Goldman CFTC Order at 2-3, and 9), (ii) making false submissions to ICAP for purpose of skewing ISDAFix rates toward where Goldman wanted them (*id.*, at 3, 9, 12), and (iii) instructing ICAP to delay reporting trades where this would help ensure that Goldman Sachs received the ISDAFix rate it wanted (*id.*, at 10-11).

⁴⁶ *Id.*

⁴⁷ CFTC Press Release, *CFTC Orders Barclays to Pay \$115 Million Penalty for Attempted Manipulation of and False Reporting of U.S. Dollar ISDAFIX Benchmark Swap Rates* (May 20, 2015), <http://www.cftc.gov/PressRoom/PressReleases/pr7180-15>.

⁴⁸ CFTC Press Release, *CFTC Orders Citibank to Pay \$250 Million Penalty for Attempted Manipulation of and False Reporting of U.S. Dollar ISDAFIX Benchmark Swap Rates* (May 25, 2016), <http://www.cftc.gov/PressRoom/PressReleases/pr7371-16>.

⁴⁹ *Id.*

⁵⁰ Goldman CFTC Order, CFTC Dkt. No. 17-03 (Dec. 21, 2016).

D. Further Investigations Into Financial Benchmarks Confirm Defendants' Tools of the Trade

106. To manipulate the market for interest rate swaps around the start of the ISDAfix polling window so as to move the ISDAfix reference rate in their desired direction, Defendants employed the same unlawful means that have been exposed by investigations and multi-billion dollar settlements concerning other financial benchmarks.

107. Most of the Bank Defendants here or their affiliates have been investigated, prosecuted and paid or agreed to pay criminal fines, civil penalties, and/or class action settlements for violating federal antitrust and other laws by colluding to rig the \$5.3 trillion-a-day foreign exchange (“FX”) market, the largest financial market in the world.

108. For instance, on May 20, 2015, Barclays, Citibank, JPMorgan, and RBS pled guilty to criminal price fixing of financial instruments involving FX benchmark rate manipulation and agreed to pay criminal fines totaling more than \$2.5 billion. Relatedly, UBS was declared in violation of a non-prosecution agreement in the LIBOR benchmark fixing case for its “collusive conduct” in FX and agreed to plead guilty to wire fraud.⁵¹ The same day, the Federal Reserve assessed hundreds of millions in civil penalties on the banks.⁵²

109. These followed earlier CFTC and other regulatory enforcement action against the banks. For instance, the CFTC found that Barclays, HSBC, Citibank, JPMorgan, Royal Bank of

⁵¹ See *United States Department of Justice, Five Major Banks Agree to Parent-Level Guilty Pleas: Citicorp, JPMorgan Chase & Co., Barclays PLC, The Royal Bank of Scotland plc Agree to Plead Guilty In Connection With The Foreign Exchange Market and Agree to Pay More Than \$2.5 Billion In Criminal Fines* (May 20, 2015), <https://www.justice.gov/opa/pr/five-major-banks-agree-parent-level-guilty-pleas>.

⁵² Press Release, Board of Governors of the Federal Reserve System (May 20, 2015), <http://www.federalreserve.gov/newsevents/press/enforcement/20150520a.htm>.

Scotland, and UBS actively colluded to manipulate the price of Forex benchmarks, and it imposed civil penalties in excess of \$1.88 billion dollars on the six banks.⁵³ The U.K.'s Financial Conduct Authority imposed a further £1.4 billion in fines on the same six banks in respect of the same manipulation in the U.K.⁵⁴ On November 12, 2014, the OCC announced that it assessed penalties of \$950 million in collective civil penalties against Bank of America, Citibank and JPMorgan.⁵⁵ The same day, The Swiss Financial Market Supervisory Authority, FINMA, sanctioned UBS for manipulating FX benchmarks.⁵⁶

110. The *FX* matter continues before criminal and civil antitrust courts and enforcement agencies. In the first weeks of 2017 alone, there have been indictments issued, guilty pleas entered, and sentences imposed for criminal price fixing of financial instruments involving FX benchmark rate fixing and manipulation that occurred contemporaneously with the conspiracy alleged herein.⁵⁷

⁵³ *CFTC Orders Five Banks to Pay over \$1.4 Billion in Penalties for Attempted Manipulation of Foreign Exchange Benchmark Rates* (November 12, 2014), at <http://www.cftc.gov/PressRoom/PressReleases/pr7056-14>; *Barclays to Pay \$400 Million Penalty to Settle CFTC Charges of Attempted Manipulation and False Reporting of Foreign Exchange Benchmark Rates* (May 20, 2015), at <http://www.cftc.gov/PressRoom/PressReleases/pr7181-15>.

⁵⁴ *FCA fines five banks £1.1 billion for FX failings and announces industry-wide remediation programme* (Nov. 12, 2014), at <https://www.fca.org.uk/markets/benchmarks/enforcement>.

⁵⁵ *OCC Fines Three Banks \$950 Million for FX Trading Improprieties* (Nov. 12, 2014), at <https://www.occ.gov/news-issuances/news-releases/2014/nr-occ-2014-157.html>.

⁵⁶ *FINMA sanctions foreign exchange manipulation at UBS* (Nov. 12, 2014), at <https://www.finma.ch/en/news/2014/11/mm-ubs-devisenhandel-20141112/>.

⁵⁷ See *United States v. Katz*, No. 1:17-cr-00003-KPF (S.D.N.Y.) (Failla, J.); *United States v. Barclays PLC*, No. 3:15-cr-00077 (D. Conn.) (Underhill, J.); *United States v. Citicorp*, 3:15-cr-00078 (D. Conn.) (Underhill, J.); *United States v. JP Morgan Chase & Co.*, 3:15-cr-00079 (D. Conn.) (Underhill, J.); *United States v. The Royal Bank of Scotland PLC*, 3:15-cr-00080 (D. Conn.) (Underhill, J.); *United States v. UBS AG*, 3:15-cr-00076 (D. Conn.) (Underhill, J.); *United States v. Usher*, No. 1:17-cr-00019-1 (S.D.N.Y.) (Berman, J.); *United States v. Ramchandani*, No. 1:17-cr-00019-2 (S.D.N.Y.) (Berman, J.); *United States v. Ashton*, No. 1:17-

111. *First*, Defendants used chat rooms, instant messages, phone calls, proprietary trading venues and platforms, and e-mails to coordinate among one another to ensure that attempts to move the market in one way or the other were not undone (unwittingly or otherwise) by the contrary efforts of other members or other large banks. In the context of currency manipulation, the CFTC found that Defendants Barclays, HSBC, UBS, Citibank, JPMorgan, and Royal Bank of Scotland, “used private electronic chat rooms to communicate and plan their attempts to manipulate the Forex benchmark prices for certain currency pairs.”⁵⁸

112. *Second*, with information in hand and a decision made to move in a particular direction, the colluding banks would equip each other with the tools to do so. In the currency

cr-00019-3 (S.D.N.Y.) (Berman, J.); *United States v. Cummins*, No. 1:17-cr-00026 (S.D.N.Y.) (Englmeyer, J.); *see also Global Head of HSBC’s Foreign Exchange Cash-Trading Desks Arrested for Orchestrating Multimillion-Dollar Front Running Scheme* (July 20, 2016), at <https://www.justice.gov/opa/pr/global-head-hsbc-s-foreign-exchange-cash-trading-desks-arrested-orchestrating-multimillion> (two HSBC traders charged with conspiracy to defraud a client in a \$3.5 billion transaction in 2011).

⁵⁸ U.S. Commodity Futures Trading Commission, *Order Instituting Proceedings Pursuant to Sections 6(c)(4)(A) and 6(d) of the Commodity Exchange Act, Making Findings, and Imposing Remedial Sanctions in the matter of HSBC Bank plc* (Nov. 11, 2014), at 2, www.cftc.gov/ucm/groups/public/@lrenforcementactions/documents/legalpleading/enfhsbcborder111114.pdf. *See also* CFTC, *Order Instituting Proceedings Pursuant to Sections 6(c)(4)(A) and 6(d) of the Commodity Exchange Act, Making Findings, and Imposing Remedial Sanctions in the matter of UBS AG* (Nov. 11, 2014), at 2; CFTC, *Order Instituting Proceedings Pursuant to Sections 6(c)(4)(A) and 6(d) of the Commodity Exchange Act, Making Findings, and Imposing Remedial Sanctions in the matter of Citibank, N.A.* (Nov. 11, 2014), at 2; CFTC, *Order Instituting Proceedings Pursuant to Sections 6(c)(4)(A) and 6(d) of the Commodity Exchange Act, Making Findings, and Imposing Remedial Sanctions in the matter of JPMorgan Chase Bank, N.A.* (Nov. 11, 2014), at 2; CFTC, *Order Instituting Proceedings Pursuant to Sections 6(c)(4)(A) and 6(d) of the Commodity Exchange Act, Making Findings, and Imposing Remedial Sanctions in the matter of The Royal Bank of Scotland, plc* (Nov. 11, 2014), at 2; ; CFTC, *Order Instituting Proceedings Pursuant to Sections 6(c)(4)(A) and 6(d) of the Commodity Exchange Act, Making Findings, and Imposing Remedial Sanctions in the matter of Barclays Bank PLC* (May 20, 2015), at 2. The CFTC has also released multiple examples of trader misconduct in private chat rooms by which Forex-trading banks – including Defendant HSBC – were able to profit from manipulation of currency benchmarks. *See* CFTC, *Examples of Misconduct in Private Chat Rooms*, www.cftc.gov/ucm/groups/public/@newsroom/documents/file/hsbcmisconduct111114.pdf.

context, where one of the five above-mentioned banks had a contrary book of orders, those orders would be “netted off” with third parties in order to reduce the number of adverse orders that were to be processed during the pivotal polling window – a process referred to as “taking out the filth” or “clearing the decks.”⁵⁹

113. When the banks had orders going in the same direction, they would “build” the orders by transferring them between other conspirators – a process referred to as “giving you the ammo.” That way a subset of banks could more easily control the process of ensuring the trades had the maximum effect at just the right time. Again, the CFTC found that the aforementioned five banks –including Defendants here– repeatedly engaged in such behavior to manipulate Forex benchmarks, including that they “altered [their] trading positions to accommodate the interests of the collective group, and agreed on trading strategies as part of an effort by the group to attempt to manipulate [downward] certain FX benchmark rates.”⁶⁰

114. *Third*, even if Defendants did not have enough “ammo” to move the market, they would just invent some. This has been called “painting the screen” – placing orders to give the illusion of activity, with the intention they would be cancelled later after the pivotal measuring window was closed. The placing of these fake orders would move the market at a time and in a way that would drive the benchmark in the desired direction. Defendants could thus use fake trades – which gave rise to no actual liability on their parts – to move the reference rate. In the ISDAfix area, as discussed below, a similar practice of simply instructing ICAP to alter the reporting process of transactions was used – and, when the market moved but not all the way,

⁵⁹ See U.K. Financial Conduct Authority, *Final Notice to HSBC Bank plc* (Nov. 11, 2014), at 16.

⁶⁰ *Id.* at 17.

ICAP could and would also step in by nonetheless setting the “reference rate” at the predetermined level.

II. DEFENDANTS CONSPIRED TO UNIFORMLY RUBBERSTAMP THE “REFERENCE RATE” THAT MEMBERS OF THE CONSPIRACY HAD DRIVEN

115. Though the process of setting ISDAfix started with the prices that were in the market for swaps at 11:00 a.m., by way of ICAP’s “reference rate,” the final ISDAfix rate was set based on the results of a “poll” of the Defendant Banks as to their own individual pricing practices that day. This should have dissuaded anyone from trying to manipulate the market for swaps, because any last-minute swings would be filtered out by the Defendant Banks’ honest submissions to ICAP. But rather than honestly and individually responding to ICAP’s poll, as discussed below, Defendant Banks conspired to consistently tell ICAP they all had *exactly the same prices, down to five decimal places*.

116. In this way, Defendants each played a knowing part in a conspiracy to price-fix, *regardless* of whether one or more Bank Defendants had that day worked with ICAP to manipulate the 19901 Screen. Defendants all knew that the USD rate was the *only* ISDAfix currency that used the “reference rate” process. They all knew the “reference rate” process was being administered by a fatally conflicted entity (ICAP), and they all knew the USD ISDAfix setting process was being corrupted on a daily basis.

117. Indeed, as early as 2008, certain Defendants considered becoming “honest and decent” and abandoning the conspiracy. For example, on August 28, 2008, a Barclays trader wrote to a former Barclays trader who had since moved to BNP Paribas, saying: “one of the things we (rbs/goldman and barcap) are talking about is to be honorable and try not to affect the

spds at 11 am. if everyone is honest and decent, we will save ourselves a lot of time and energy.”⁶¹

A. Defendants Repeatedly Claim – Impossibly – To Have Had Identical Rates

118. After ICAP had determined the “reference rate” for a given tenor for a given day, it would circulate that rate to the Defendant Banks. The Defendant Banks were permitted to consider the reference rate, but were required to submit a rate which was a mean of where that Defendant was in fact offering and bidding swaps in the relevant currency and of the relevant maturity. Under the explicit terms of the ISDAfix rate-setting process, Defendants were thus *not* free to simply accept the reference rate unless the mean of their own offer/bid rates happened to be *exactly the same* as the reference rate.

119. In reality, however, the Defendant Banks rigged this process, in contravention of the relevant rules. Defendant Banks agreed not to submit the *real* rates upon which they would trade in the market, but instead to accept the ICAP reference rate *regardless* of whether it matched the mean of that Defendant Bank’s bid/offer rates.

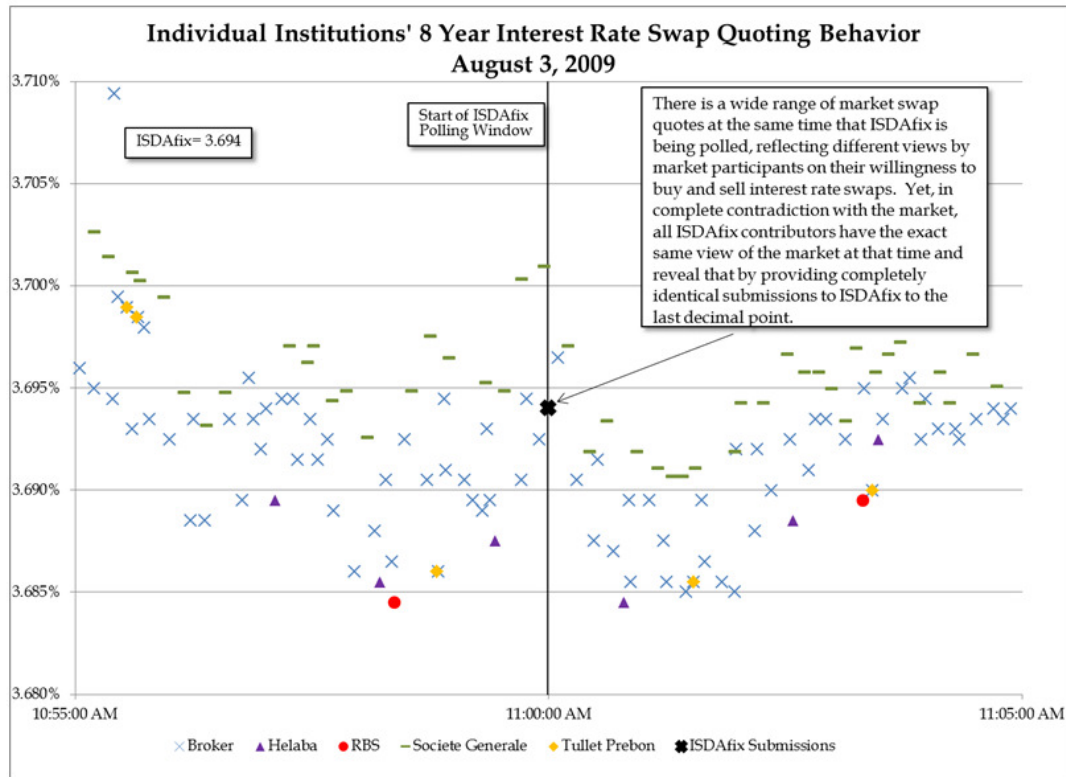
120. The Defendant Banks could and would communicate with each other via phone, email, and online chat rooms as to where to move ISDAfix. As illustrated by ICAP’s fine for its involvement in similar benchmark setting misconduct, the Defendants banks could and would also coordinate their efforts by using ICAP as a go-between. Based on these communications, Defendant Banks coordinated their approach to ISDAfix, including strategies such as banging the close *and* falsifying submissions. Currently, the CFTC has reviewed phone recordings and over one million emails and instant messages linked to this conspiracy.

⁶¹ BNPP_AK_00035048.

121. However, the reference rate process enabled the conspiracy to operate even without express, daily coordination. Every member of the conspiracy knew that its daily task was to rubberstamp the reference rates, no matter what – and that in return it could rely on others to do the same when it was advantageous for itself to take the lead in manipulating.

122. ISDAfix rate submissions go to five decimal points – to a thousandth of a basis point (*e.g.*, 3.20219%). Even if contributing banks always responded similarly to market conditions, the odds against contributors unilaterally submitting the exact same prices down to the thousandth of a basis point are astronomical. Yet, this happened *almost every single day* between at least 2009 and December 2012 (the only years for which data was available at the time of the consolidated amended complaint).

123. To illustrate the improbability of so many banks taking the exact same view of the market, absent collusion, consider August 3, 2009. Quotes were scattered, as they naturally are, but the Banks' ISDAfix submissions for that day were remarkable – they all claimed to have the *exact same* view of the market.



124. “Dispersion” refers to the extent to which each ISDAfix submission varies from every other ISDAfix submission. Plaintiffs’ experts compared the level of dispersion in ISDAfix submissions to the level of dispersion found in financial benchmarks that use similar submission systems. They computed the average difference between the highest and lowest rate submissions for a variety of such benchmarks.

125. The level of uniformity observed in ISDAfix was not present in the rate submissions for analogous benchmarks. The only exception was a period of approximately one year from August 2006 through August 2007 in which USD LIBOR quotes were completely equal to each other day in and day out for almost virtually all of the contributing banks. But of course, it is now known that LIBOR was being manipulated, so this parallel bolsters Plaintiffs’ allegations.

126. Aside from LIBOR, the comparable benchmark with the least dispersion among its submissions – the ISDAfix rate in British pounds – showed six times more dispersion than the USD ISDAfix submissions. Benchmarks for government bonds showed between 23 and 37 times more dispersion than USD ISDAfix. These findings point powerfully to the conclusion that the USD ISDAfix panel banks were coordinating their ISDAfix submissions.

Instrument	Dispersion (basis points)	Ratio to USD ISDAfix
30-year USD ISDAfix submissions	0.12	N/A
30-year GBP ISDAfix submissions	0.7	6x
30-year EUR ISDAfix submissions	1.0	8x

127. The above chart demonstrates that the level of dispersion seen in GBP (British Pound) and EUR (Euro) ISDAfix submissions is respectively six and eight times higher than USD ISDAfix submissions of the same duration.⁶² While, for the entirety of the Class Period, ICAP administered the USD ISDAfix rates, Reuters administered the ISDAfix rates for other currencies. ICAP, unlike Reuters, functions as both the ISDAfix administrator and as an inter-dealer broker. Because of ICAP's commission structure, its brokers have a strong incentive to assist in manipulating ISDAfix rates. Where that incentive does not exist, substantially greater levels of dispersion are observed.

⁶² The data within this table is based on ISDAfix submissions by dealer banks across a selected sample of days through mid-2013. In the case of USD submissions, the average result across the sample also corresponds to the average dispersion taken across all submissions from 2009 through mid-2013.

128. The results are even more dramatic when comparing USD ISDAfix to other, similar non-ISDAfix benchmarks, as seen below.⁶³

Instrument	Dispersion (basis points)	Ratio to USD ISDAfix
30-year USD ISDAfix submissions	0.12	N/A
USD interest rate swaps	0.7	6x
10-year German Bunds	1.4	12x
10-year US Treasury Bonds	2.7	23x
10-year Italian BTPs	4.4	37x

B. The Level of Uniformity Seen in Defendants' ISDAfix Submissions Was Undermined by Their Concurrent Market Rates

129. Prior to December 2012, the Defendant Banks made stunningly similar ISDAfix submissions. That those were not actually each bank's honest views of its own prices is not only confirmed by the sheer statistical unlikelihood of such perfect alignment, and by the comparative misalignment to other interest rates, but also by the fact that the banks in the real world were not so aligned at any other time of the day.

130. The following table shows how Defendants RBS and JPMorgan (the only two Defendants with identifiable quotes available to Plaintiffs) *almost always* told ICAP that they had *identical* rates. Yet on those same exact days, RBS and JPMorgan were *only rarely* providing similar quotes to the actual market. The table below contains data measuring the

⁶³ The data within this table is based on end of day quotes from dealer banks from the end of 2010 until mid-2014 for USD interest rate swap quotes; from the beginning of 2014 until mid-2014 for US Treasury Bonds and German Bunds; and from mid-2013 until mid-2014 for Italian BTPs. All data is from Bloomberg sources.

percentage of instances where RBS and JPMorgan submitted matching interest rate swap prices versus the percentage of instances where RBS and JPMorgan contributed matched ISDAfix submissions for the period January 1, 2009 – December 18, 2012. The swap prices compared were submitted within two minutes of each other.

Comparison of Agreement: ISDAfix and Market Price (JPMorgan and RBS)

Maturity	Number of Instances Where RBS and JP Morgan Submit Interest Rate Market Prices Within 2 Minutes of Each Other	Percentage of Instances from Column [B] Where Market Prices Match	Percentage of Days that RBS and JP Morgan Contribute Matching ISDAfix Submissions and for Which They Also Submit Interest Rates Prices Within 2 Minutes of Each Other	Number of Days from January 2009 through December 18, 2012 Where Both RBS and JP Morgan Contribute ISDAfix Submissions	Percentage of Matching ISDAfix Submissions from Column [E]
[A]	[B]	[C]	[D]	[E]	[F]
1Y	n/a	n/a	n/a	163	93.9%
2Y	19	21.1%	100.0%	163	97.5%
3Y	24	0.0%	100.0%	163	95.1%
4Y	1	0.0%	100.0%	163	91.4%
5Y	18	0.0%	100.0%	163	93.9%
6Y	n/a	n/a	n/a	163	93.3%
7Y	12	25.0%	100.0%	163	90.2%
8Y	n/a	n/a	n/a	163	91.4%
9Y	n/a	n/a	n/a	163	92.6%
10Y	21	23.8%	100.0%	163	87.1%
15Y	n/a	n/a	n/a	163	91.4%
20Y	n/a	n/a	n/a	163	91.4%
30Y	n/a	n/a	n/a	163	93.9%

131. The only possible explanation for these results is simple: Defendants' ISDAfix submissions to ICAP were not – as they should have been – based on each Bank's unilateral and honest pricing decisions.

C. The Level of Uniformity Seen in Defendants' ISDAfix Submissions Abated Once Regulatory Scrutiny Increased

1. Defendant Banks' submissions begin to disperse in December 2012

132. If the mere provision of reference rates validly explained the uniformity in bank submissions observed above, then one would have expected the Banks' bunching to continue in every year in which reference rates were provided. To the contrary, the submission rates dispersed in late 2012 and into 2013, even though the reference rate process nominally remained the same.

133. In late 2012, with subpoenas being served on ISDAfix contributors and the announcement of the UBS LIBOR settlement and the subsequent announcements throughout 2013 of investigations into other benchmarks – such as the WM/Reuters foreign exchange fix, London gold fix, and even ISDAfix itself – Defendants’ ISDAfix conspiracy began to unravel.

134. Throughout 2013, Defendant Banks’ USD ISDAfix rate submissions became increasingly dispersed. For at least three years prior to December 2012, the Defendant Banks had submitted identical ISDAfix submissions virtually every day. By the end of 2013, however, less than half of the submissions submitted to ICAP were identical to the final ISDAfix rate for a given day. These changes in behavior of the ISDAfix panel banks are not explainable by any market events or market forces. They instead reflect steps by the Defendants to stop submitting identical rates in the hope of heading off further regulatory scrutiny of their conspiracy.

135. The chart below uses time periods corresponding to what can be understood as different “stages” ISDAfix manipulation: period one predates the first LIBOR manipulation settlement to reveal the involvement of brokers such as ICAP, period two ranges from this revelation regarding broker involvement until the first news of an investigation into ISDAfix, period three covers the period after news of the investigation has broken but prior to any indication that illegal conduct has been found, and period four follows the announcement that regulatory investigations found what they regarded as evidence of criminal behavior.

Average Percentage of Daily Contributor Submissions That Are Identical to ISDAfix				
Tenor	Period 1 (1/2/2009 - 12/18/2012)	Period 2 (12/19/2012 - 4/7/2013)	Period 3 (4/8/2013 - 8/1/2013)	Period 4 (8/2/2013 - 12/31/2013)
USD1Y	94.23%	67.72%	55.65%	43.00%
USD2Y	94.88%	61.99%	48.97%	38.68%
USD3Y	94.71%	58.41%	50.01%	39.06%
USD4Y	93.72%	58.14%	45.69%	34.77%
USD5Y	95.27%	81.88%	76.31%	56.76%
USD6Y	95.73%	54.80%	36.44%	29.02%
USD7Y	94.74%	56.55%	45.41%	32.87%
USD8Y	95.43%	43.75%	39.15%	31.23%
USD9Y	94.95%	48.13%	37.39%	32.22%
USD10Y	93.57%	78.66%	72.93%	50.01%
USD15Y	95.29%	50.22%	40.83%	32.03%
USD20Y	95.75%	50.41%	42.93%	26.91%
USD30Y	95.95%	85.04%	72.72%	59.46%
Source: Thomson Reuters, Bloomberg.				

136. The above chart shows the average percentage of USD ISDAfix submissions for various tenors that were identical to the final ISDAfix rate for the day they were submitted. In Period 1 (from January 2, 2009 to December 18, 2012), about 95% of ISDAfix submissions were identical to the eventual, published ISDAfix rates for that day. In all subsequent periods, measuring the extent to which ISDAfix submissions matched the ISDAfix rates after December 19, 2012 (when the UBS LIBOR settlement became public), one sees a massive drop in the level of submissions identical to the ISDAfix rates. For example, in the USD6Y tenor, in Period 1, 95.73% of ISDAfix submissions were identical to the published ISDAfix rate. In the same tenor in Period 4, only 29.02% of submissions were identical to the ISDAfix rate.

137. Even where the submissions were not identical, they were still bunched together. The following table tracks the average difference between the highest and lowest ISDAfix rate submissions on each day for the same four time periods seen above. For each period, Plaintiffs' experts subtracted the lowest ISDAfix rate submission on each day from the highest submission and then averaged the difference for the whole period. The numbers go steadily up after December 19, 2012, indicating that the differences among ISDAfix submissions substantially

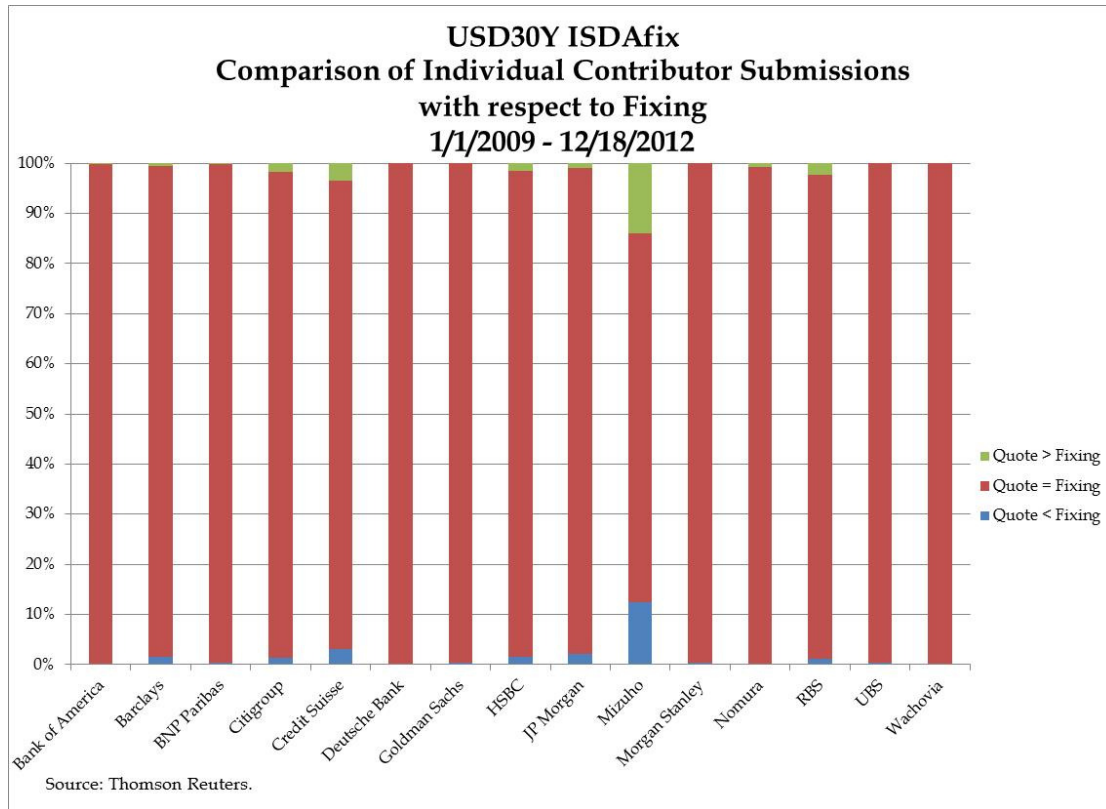
increased after disclosure of the involvement of banks and brokers in the LIBOR conspiracy and other benchmark scandals. This pattern continues over time, with the average difference between the highest and lowest ISDAfix submission steadily increasing as Defendant Banks came under fire from regulators. In fact, across many tenors, the average difference between minimum and maximum daily submissions more than quadrupled from Period 1 to Period 4.

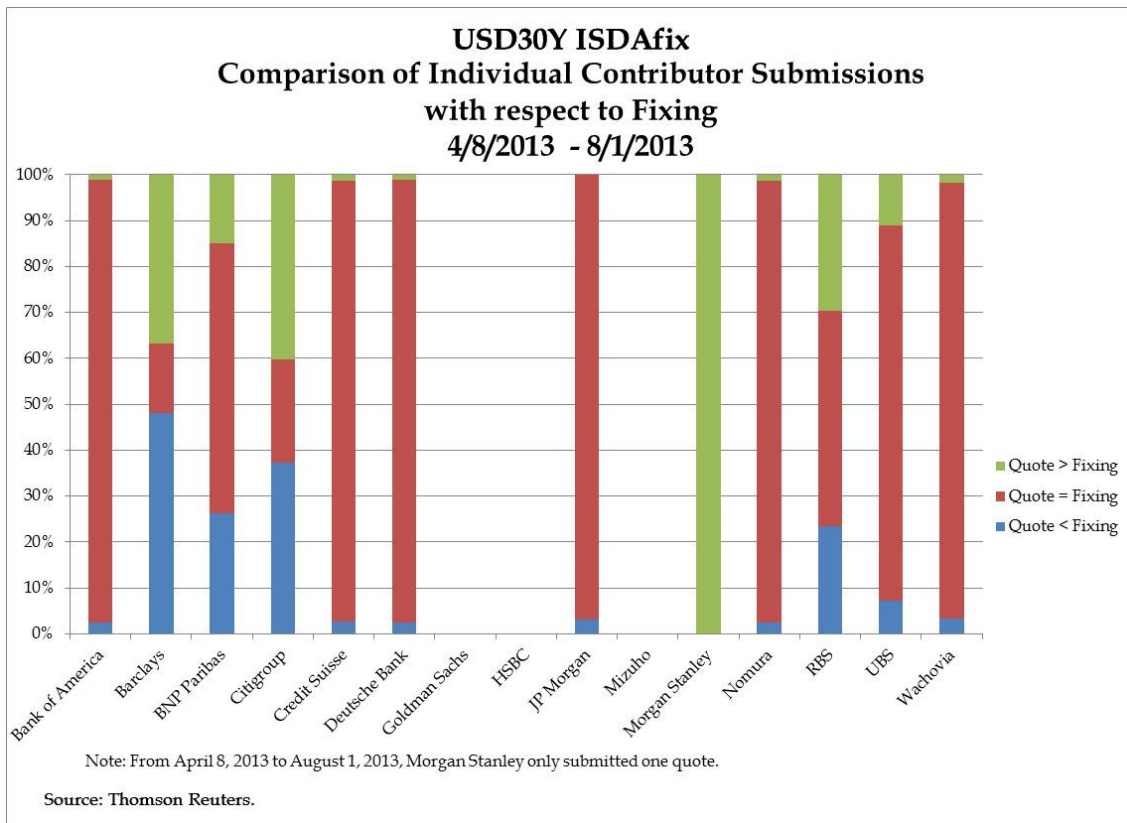
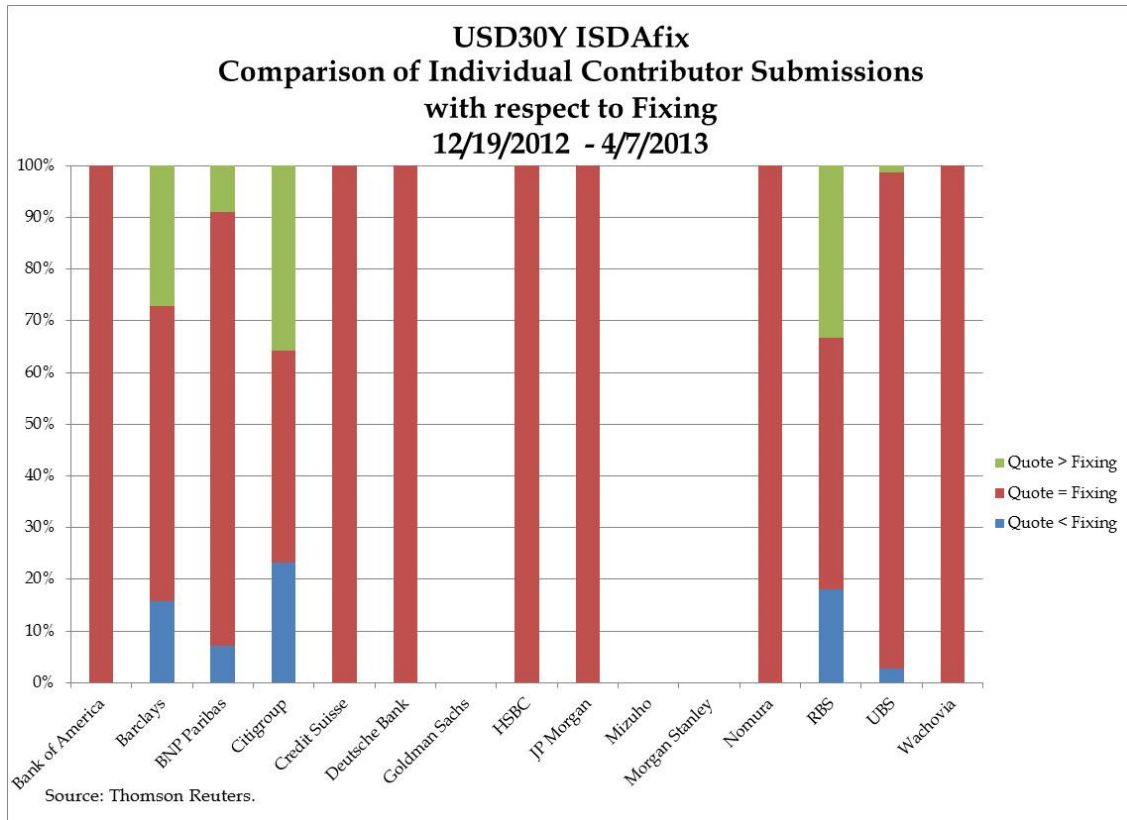
Average Difference Between Minimum and Maximum Daily Contributor Submissions for ISDAfix				
Tenor	Period 1 (1/2/2009 - 12/18/2012)	Period 2 (12/19/2012 - 4/7/2013)	Period 3 (4/8/2013 - 8/1/2013)	Period 4 (8/2/2013 - 12/31/2013)
USD1Y	0.0013	0.0019	0.0029	0.0040
USD2Y	0.0018	0.0045	0.0026	0.0034
USD3Y	0.0020	0.0033	0.0035	0.0039
USD4Y	0.0026	0.0031	0.0037	0.0045
USD5Y	0.0016	0.0038	0.0028	0.0039
USD6Y	0.0014	0.0034	0.0043	0.0056
USD7Y	0.0018	0.0032	0.0038	0.0049
USD8Y	0.0013	0.0041	0.0048	0.0056
USD9Y	0.0013	0.0038	0.0046	0.0055
USD10Y	0.0021	0.0027	0.0032	0.0044
USD15Y	0.0016	0.0041	0.0049	0.0057
USD20Y	0.0012	0.0043	0.0050	0.0059
USD30Y	0.0010	0.0025	0.0033	0.0044
Source: Thomson Reuters, Bloomberg.				

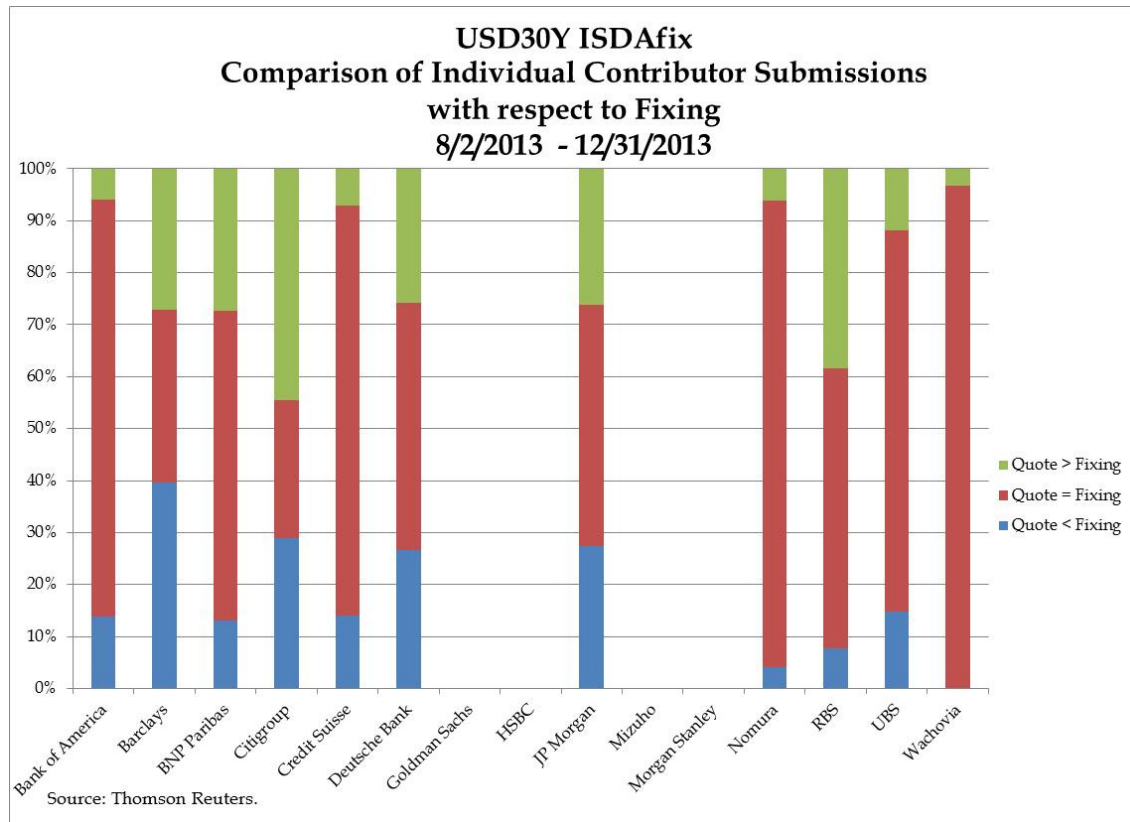
138. The practice of rubberstamping – or close to it – the reference rate ran across virtually every ISDAfix contributor. The following charts demonstrate the percentage of individual Defendant Banks’ ISDAfix submissions that were *identical* to the ISDAfix rate for several different time periods. Red represents the percentage of the time a Defendant Bank’s ISDAfix submission was identical to the ISDAfix rate. Blue reflects the percentage of the time the ISDAfix rate was greater than the bank’s submission, while green represents the percentage of the time that the ISDAfix rate was lower than the bank’s submission.⁶⁴

⁶⁴ Charts for additional tenors (20Y, 15Y, 10Y, 9Y, 8Y, 7Y, 6Y, 5Y, 4Y, 3Y, 2Y, 1Y) are contained in Appendix B.

139. As can be easily seen, the amount of red – *i.e.*, how often the Defendant Banks were each submitting the same exact rate – dissipates after December 2012.



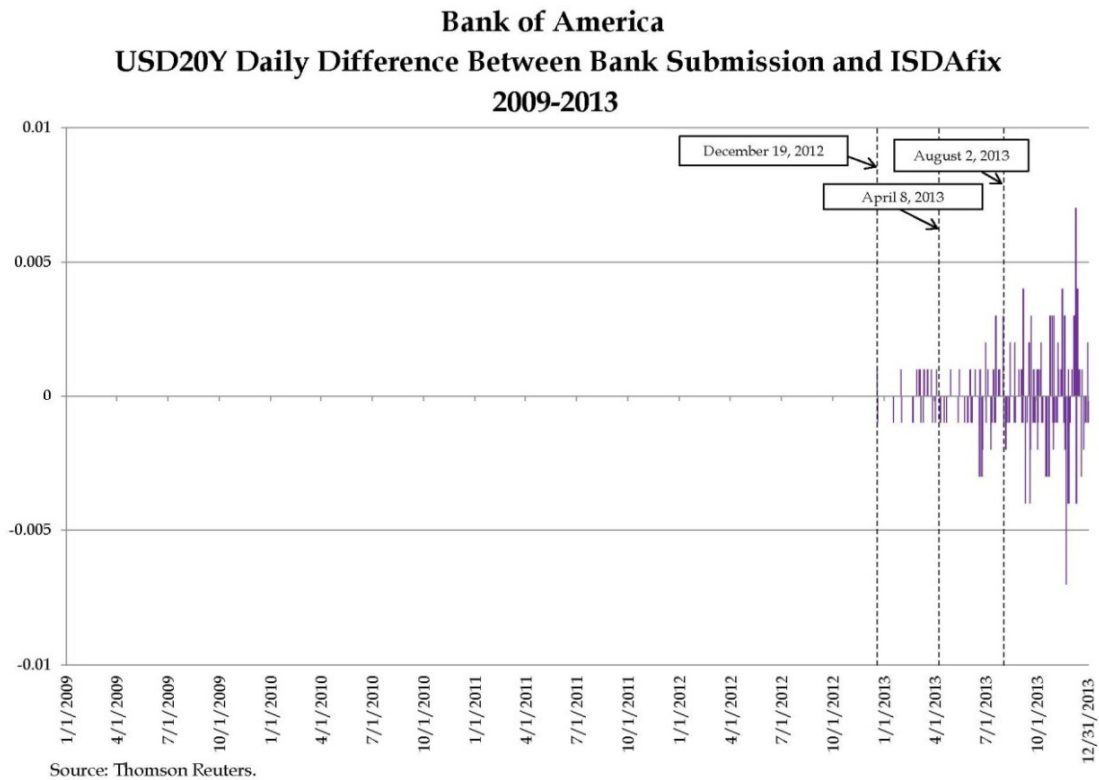




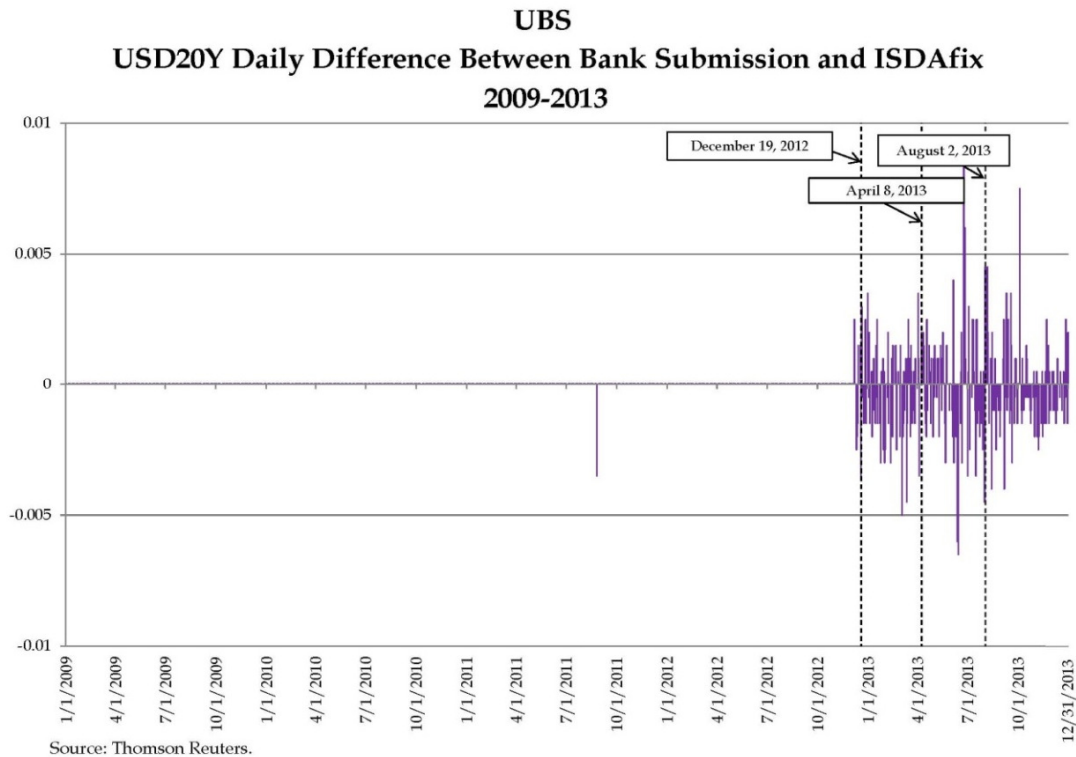
140. The first chart demonstrates that all Defendant Banks made identical submissions to ICAP well over 90% of the time prior to December 19, 2012. After December 19, 2012, amid news of the brokers' role in LIBOR and other benchmark scandals, Defendant Banks' submissions started to disperse. For several banks, the percentage of days on which their submissions are identical to the eventual ISDAfix rate goes from over 90% to under 50%. Virtually every bank shows a significant change in behavior. The picture that emerges from this study is the beginning of a structural break in the conspiracy where nearly every single ISDAfix contributor withdraws from the conspiracy and begins either to stop submitting altogether or to submit rates that truly reflect its actual swap rates in the marketplace.

141. To see this remarkable uniformity of rates another way, Plaintiffs' experts charted over time the difference between a Defendant Bank's ISDAfix submission, and the final rate.

The following charts represent Bank of America's and UBS's submission patterns over time in the USD 20Y tenor. The purple line represents the extent to which the individual banks' ISDAfix submissions deviated from the day's ISDAfix rate. In both charts, the purple line barely appears or does not appear at all until December 2012. Before December 2012, the banks' USD submissions always matched the ISDAfix rate. After December 19, 2012, the purple line begins to move upwards and downwards with increasing regularity – the banks' submissions frequently do not match the ISDAfix rate.⁶⁵



⁶⁵ Additional charts for all Defendant Banks for 30Y, 20Y, 15, 10Y, 9Y, 8Y, 7Y, 6Y, 5Y, 4Y, 3Y, 2Y, and 1Y maturities are contained in Appendices C – P.



142. Of the original 15 ISDAfix panel banks, fewer than eight remained as of the time the ISDAfix process was restructured and renamed the “ICE Swap Rate” in April 2015.⁶⁶ As with the dispersions in rates submitted, these departures are directly linked to the ongoing investigations into rate-fixing of ISDAfix and other benchmarks. Increased regulatory scrutiny, as well as possible criminal penalties, have made participation in ISDAfix less profitable and, without the ability to manipulate the rates, Defendants “don’t see any upside.”⁶⁷ Indeed, “[f]irms are pulling out of rates such as . . . ISDAfix on growing concern that they may face lawsuits, fines and criminal penalties if found to have engaged in wrongdoing.”

⁶⁶ Intercontinental Exchange, *ISDAFIX Characteristics and Contributor Panels: US Dollar [USD] – Rates*, https://www.theice.com/publicdocs/services/ISDAFIX_USD_Rates.pdf.

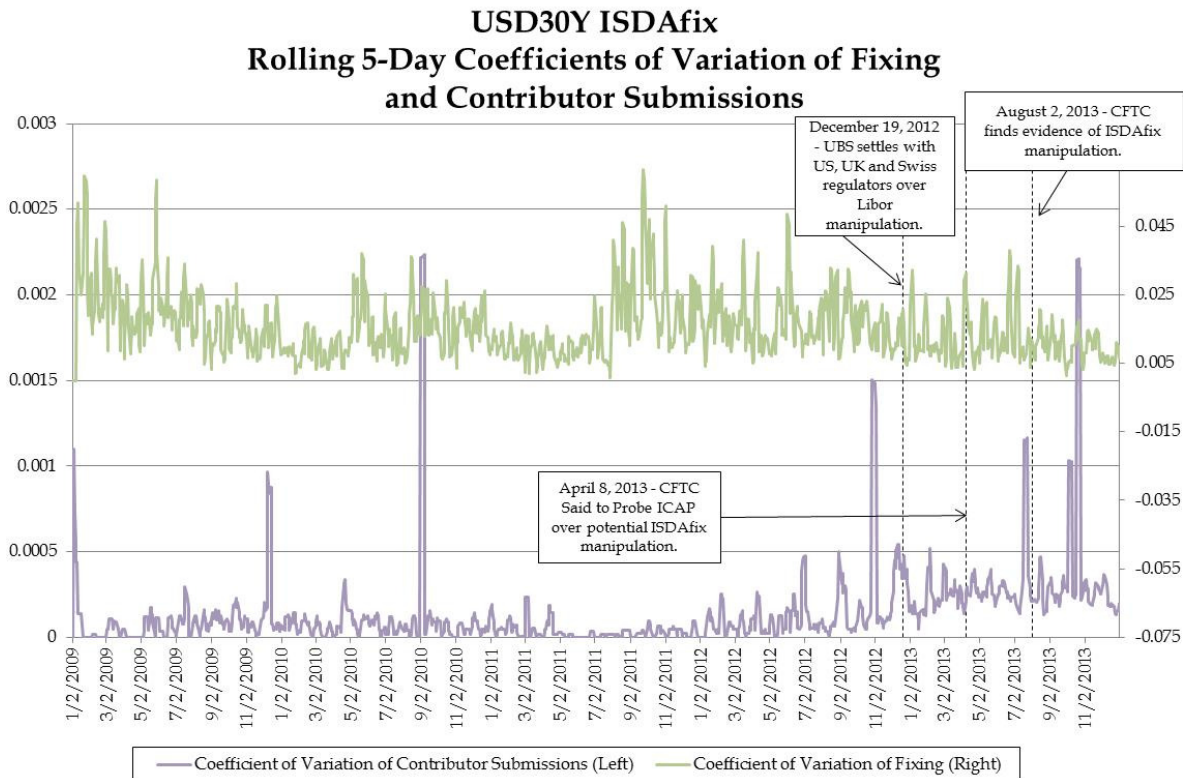
⁶⁷ Liam Vaughan, *Banks Drop Off IsdaFix Panel Amid Rate-Rigging Probes*, Bloomberg (Apr. 15, 2013), <http://www.bloomberg.com/news/print/2013-04-14/banks-drop-off-isdafix-panel-amid-rate-rigging-probes.html>.

2. The change in behavior cannot be explained by anything other than the breaking of the conspiracy

143. As discussed immediately above, the Defendant Banks' submissions begin to disperse in December 2012, when the banks started to come under scrutiny. Plaintiffs' experts performed tests to determine if this increase in dispersion could be explained by some phenomenon other than the breaking of a conspiracy.

144. For instance, the experts sought to determine if the increase in dispersion could be explained by an increase in volatility in the market. To do this, Plaintiffs' experts first charted both the variation in individual ISDAfix submissions for the USD 30-year swap rate and the variation of actual ISDAfix rates for that same USD swap rate, with both measures calculated over rolling five-day windows. In the chart below, the higher, green line represents the average level of variation in the final ISDAfix number,⁶⁸ *i.e.*, it rises when the final ISDAfix rate changed more from day to day to day. The lower, purple line represents the average level of variation in USD 30-year ISDAfix submissions. It rises when the Defendant Banks' daily ISDAfix submissions diverge. While the green line (ISDAfix) may spike or fall for any particular period, what is important is that the overall trend stays steady – which is to say, there is no obvious change in the volatility of the market that would explain the change in the behavior of Defendants' ISDAfix submissions.

⁶⁸ Specifically, it charts the coefficient of variation, which is a normalized measurement of the level of dispersion, over a five-day rolling window. The data in this chart is solely from the Reuters actual/360 swap rate data.

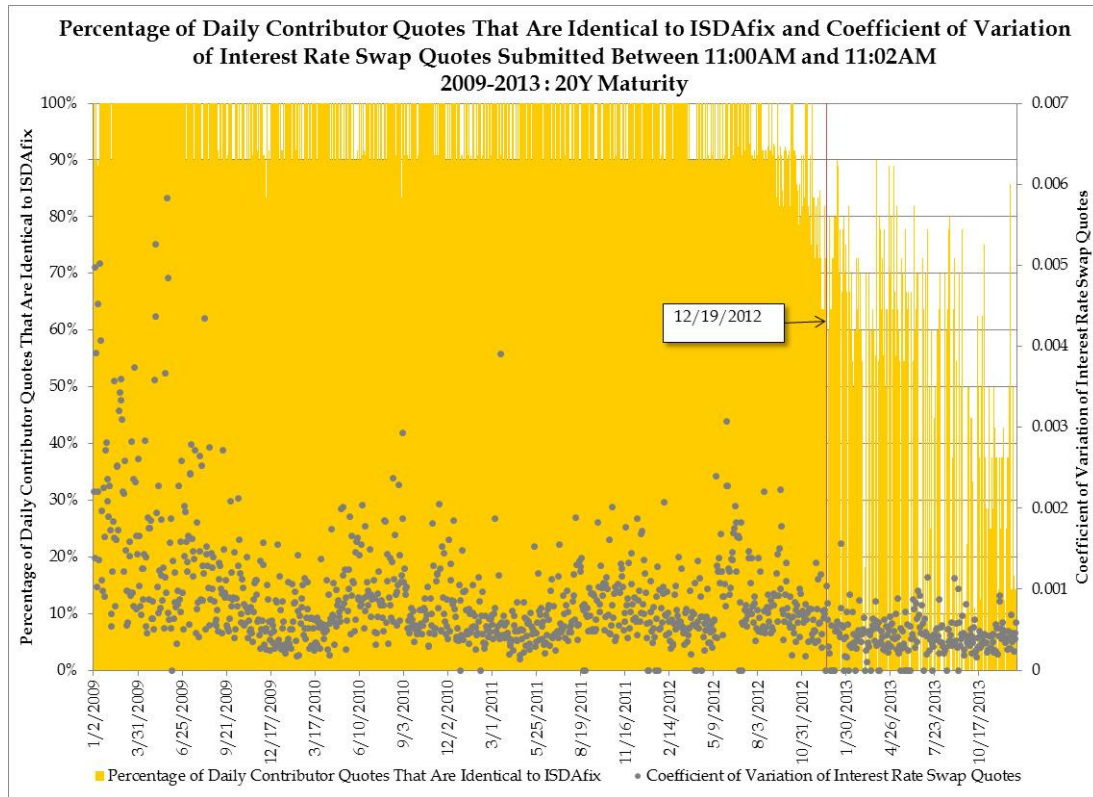


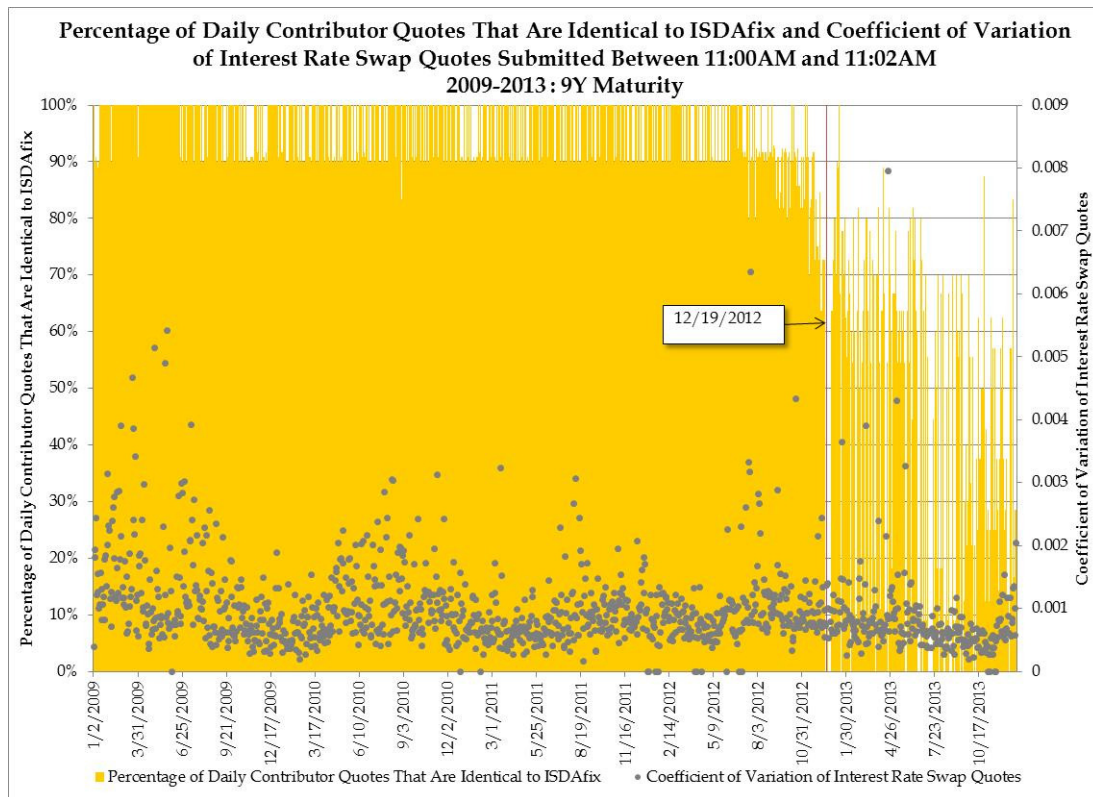
Sources: Thomson Reuters, Bloomberg.

145. The following charts similarly show that there was no increase in the volatility in the market that could explain why Defendants suddenly started telling ICAP they had different prices, when they had not before. Here, volatility is shown by the gray dots, one dot per day, for the dispersion in market quotes at the beginning of the polling window, *i.e.*, 11:00 to 11:02 a.m., at the same exact time banks were making their submissions to ISDAfix.

146. The higher along the Y-axis, the more variability in prices existed around the fixing window for each day. At the same time, the following charts include, with yellow lines, indications as to how often the banks' submissions matched ISDAfix. There is a stark difference in behavior in the yellow lines starting around the time the banks came under scrutiny (they become shorter and spread out, indicating the submissions matched far less often) even though there is no clear change in patterns in the grey dots (that is, there was *not* a sudden increase in

volatility in 2013). Therefore, there were no changes in swaps market capable of explaining the drastic changes in ISDAfix submissions. Similar charts for additional tenors are contained in Appendix Q.





147. Market uncertainty thus cannot explain the drastic changes in ISDAfix submissions that coincided with the time period during which Defendant banks were coming under regulatory scrutiny. That the conspiracy began to break in December 2012 – *i.e.*, where the data shows the ISDAfix submissions began to act markedly differently – evidences consciousness of guilt on the part of Defendants. This is the only plausible explanation for the profoundly anomalous pattern of submissions, which started to dissipate when the banks came under scrutiny – despite no change either in the underlying ICAP reference-rate/polling process, or in the volatility of the underlying market.

III. DEFENDANTS AGREED NOT TO COMPETE IN THE SWAP MARKET TO DRIVE ICAP'S REFERENCE RATE TO THEIR PREFERRED LEVEL

148. As noted, the USD ISDAfix setting process for a given tenor starts with ICAP providing a “reference rate” to the Defendant Banks. The telltale signs of a conspiracy are found

in the fact that the Banks repeatedly rubberstamped that rate, in lockstep fashion, every day, for years. They then began to stop doing so as often when the regulatory heat was turned up.

149. But there would be no reason to rubberstamp the reference rate, if the reference rate was not set where the members of the conspiracy wanted it. The ISDAfix conspiracy thus also involved joint efforts to manipulate the reference rate.

150. The reference rate is drawn from, among other things, completed trades and executable bids observed in the market for swaps – a market in which Defendants were horizontal competitors. But competing fully on price in the market for swaps risked ISDAfix being set at an undesired level. Defendants' conspiracy thus involved price-fixing in the market for swaps – the sharing of sensitive information among competitors, as to enable joint efforts to move the market in the desired direction just prior to 11:00 a.m.⁶⁹ This ensured that the rubberstamping would result in an ISDAfix rate that was favorable to Defendants, regardless of what an unmanipulated market for swaps would have looked like.

A. Even a Small Sample of the Evidence Produced to Date Confirms the Reference Rate Was Routinely Manipulated By All of the ISDAfix Panel Banks⁷⁰

151. The evidence to date confirms that ISDAfix was routinely being manipulated, and this was a fact know to all of the ISDAfix panel banks. For example, where one or more banks had a derivative or other investment whose value could be impacted by ISDAfix, ICAP brokers would gladly assist the Defendant banks in executing a high volume of trades just before the

⁶⁹ As discussed further below, Defendants had to try to move the market, and thus the reference rate, among other reasons, so as to not make the conspiracy, and ISDAfix's unreliability, too obvious. But when the market did not move far enough to hit the target rate exactly, ICAP could and would also simply set the reference rate at the predetermined level.

⁷⁰ The examples of manipulation that are set out in this section, or elsewhere in this complaint, are only a small but representative sample of the evidence of Defendants' manipulation that Plaintiffs have discovered in Defendants' productions to date.

reference rate was set, or share with them sensitive order flow information from other Defendant banks, so they could successfully to bang the close. For example:

- On September 18, 2008, a Barclays trader, Trader G, Managing Director, Head of U.S. Interest Rates Trading in New York, instructed an ICAP broker, Broker A, to buy swap spreads high in order to drive ISDAfix up because the bank stood to receive more in cash settlements from counterparties if ISDAfix was higher. Trader G, a supervisor of multiple desks, told Broker A: “Okay, at eleven o’clock, we have an option settlement, okay, I have 200 10s of ammo and I need to get the screen as high as possible.” The trader later told the same broker “don’t let him hit me down at a quarter” and “I want at least a half middle,” referring to the higher ISDAfix rate he wanted.⁷¹
- On April 28, 2008, an ICAP broker, Broker C, Vice President, Interest Rate Swaps, explained to a BNP Paribas trader, Trader H, Fixed Income Trader, USD Dollar LIBOR desk, how he thought another BNP Paribas trader, Trader B, Medium and Short Term Interest Rate Swap Group, intended Trader H to bang the close to manipulate ISDAfix. Broker C explained to Trader H: “[t]he fixing is set at 11:00:00 not before. I think what [Trader B] meant is that if u want to move the screen, he was probably suggesting u start at 10:59:50.”⁷²

⁷¹ BARC-IFX_00045684 and BARC-IFX_00045685.

⁷² BNPP_AK_00085617.

- On August 9, 2007, an ICAP broker, Trader D, explained to a Credit Suisse employee named Trader I, Equity Derivatives Front Office RAD Developer, that it “feels like MS is going to lift 2’s at 11.”⁷³
- On April 15, 2010, a trader at Wells Fargo, Trader J, Director, Interest Rate Swap Trader, noted that traders at Morgan Stanley were trying to increase the spread on a 10 year ISDAfix tenor, explaining to other traders at Wells Fargo that there was a “lot of interest in 10y for 11am isda fixr – MS was trying to push sprd higher.”⁷⁴ One month earlier, on March 17, 2010, Wells Fargo’s options desk had an expiry on at least \$240 million of ISDA-linked swaptions, and Trader J directed the swap traders responsible for submitting Wells Fargo’s rates, Traders K, L and M, to mark the 10 year ISDAFix tenor low: “for 11oclocks today, could u mark our 10y point low (0.25-0.5). option desk has expiry today.”⁷⁵
- On yet another occasion, Barclays stood to receive more from a counterparty on a trade that it had entered if the 10-year ISDAfix was lower, and so a Barclays swaps trader, Trader N, Derivatives Trader, instructed an ICAP broker that Barclays “wants to keep 10-year spreads down. So, if you can, we don’t have much ammo, like a hundred; don’t let it go up to 9, hit it down” to which the broker replied “I hear you. I’m just gonna lock ’em down at 11.”⁷⁶

152. The banks sought to move ISDAfix artificially in order to increase the value of various ISDAfix-linked investment they held in their portfolios. For example, in one instance

⁷³ ICM-000071630.

⁷⁴ AK-WF00012031-12034 at 12033.

⁷⁵ AK-WF00007925.

⁷⁶ BARC-IFX 00045457.

Barclays entered into a cash-settled swaption with a client and then worked almost *simultaneously* to manipulate the applicable ISDAfix rate for that cash settlement:

- On January 17, 2007, a Barclays employee, Trader O, phoned another Barclays employee, Trader P, to confirm cash settlement on a Barclays swaption tied to ISDAFix:

Trader O: "Cash Settled will be fine"

Trader P: "Kay,"

Trader O: "You wanna do that against ISDAfix 3, alright?"

Trader P: "okay, so you'll cash settle the receiver?"

Trader O: "We'll cash settle whichever one is in the money against ISDAfix 3 . . . whichever is obvious, it looks like it'll be the receiver[.]"⁷⁷

- Minutes later, Trader O placed a second call to an ICAP employee, Broker A, to coordinate the rate, direction and "ammo" for the ISDAfix manipulation necessary to increase Barclay's profit on that cash settlement:

Trader O: "Bruce ... where are five years?"

Broker A: "two and a quarter"

Trader O: "I actually want to hit them at eleven, Stanley might be going the other way"

Broker A: "Oh fantastic. you're a fucking animal."

Trader O: "Try and hit them at two and eleven, okay? You've got, you really don't have that much, you probably have three hundred fifty to work with."

Broker A: "oh great."⁷⁸

⁷⁷ BARC-IFX-C_00000303

153. Similarly, on September 22, 2012, a Morgan Stanley trader, Trader B, Head of U.S. Interest Rates Swap Trading, contacted an ICAP broker, Broker B, to stress that “.25bp for us is worth hundreds of thousands of usd! I need to explain to you . . . We need you to force the screen up or down.”⁷⁹

154. Likewise, on October 9, 2008, BNP Paribas trader, Trader Q, asked BNP trader, Trader R: “[W]hats [*sic*] going on with the 11am fix, and whats [*sic*] the desk strategy?” Trader R replied: “500k of steepening...to move the screen up.” Trader Q then asked: “[F]or the 11am fixing, how much is it worth? Meaning, how much money do we save, per basis point?” Trader R replied: “[I]t’s about 100k per bp...a little more.”⁸⁰

B. The Use of “Screens” To Identify Further Acts of Active Manipulation

155. As discussed above, the evidence confirms that the reference rate was being regularly manipulated by the banks participating on the ISDAfix rate-setting panel. This is consistent with the findings of Plaintiffs’ experts who reached the same conclusion using only publically available trading data. Plaintiffs’ experts were able to preliminarily identify *thousands* of instances throughout the Class Period on which manipulative trading practices in the market for swaps occurred across multiple tenors around the fixing window. Because Defendants invariably accepted the reference rate and helped determine it by moving market rates ahead of the polling window, as described in more detail in Section II above, such practices not only meant that the market for swaps was distorted by Defendants’ pricing manipulations, but also that the final ISDAfix rate would be as well.

⁷⁸ *Id.*

⁷⁹ MS-ALASKA00018093.

⁸⁰ BNPP_AK_00058471.

156. Plaintiffs' experts applied various screening methodologies to identify a non-exhaustive and preliminary set of days where the conspiracy was particularly active in moving rates even further than it had at other times. "Screens" are statistical tools based on economic models that use available data such as prices, bids, quotes, spreads, market shares, and volumes to identify the existence, causes, duration, and scope of manipulation, collusion, or other illegal behavior, and who may have been involved.⁸¹ The screens that Plaintiffs' experts used to analyze the intra-day USD swap rates for the period of January 2007 – December 2013 were as follows:

- a) Screen #1: Plaintiffs' experts tested the statistical significance of market moves in each analyzed ISDAfix tenor immediately before and after the fixing window. Plaintiffs' experts used an Exponentially Weighted Moving Average estimator – a model that uses historical observations to capture the dynamic features of the volatility of the marketplace for any specific time or date – to predict the size of an expected market move. The model gives more weight to recent market observations than dated ones when estimating market volatility. Plaintiffs' experts compared the actual market moves immediately before and after the fixing window to the moves predicted by the Exponential Weighted Moving Average estimator, and identified as anomalous the moves whose size significantly exceeded the model's predictions.
- b) Screen #2: Plaintiffs' experts tested whether USD swap rates relevant to each of the analyzed tenors of ISDAfix rates immediately reversed direction following the ISDAfix windows. Specifically, Plaintiffs' experts examined whether at least half of the market movements leading up to the daily fixing were reversed within a time interval corresponding to the length of the fixing window (*i.e.*, before 11:30 a.m. following the 11:00 to 11:15 fixing window).

⁸¹ See generally Testimony of Rosa M. Abrantes-Metz on behalf of the Office of Enforcement Staff, Federal Energy Regulatory Commission (Sept. 22, 2014), http://elibrary.ferc.gov/idmws/doc_info.asp?document_id=14274590. For instance, the use of screens was part of the initial analysis that eventually led to the discovery of the LIBOR rate-setting scandal that is still roiling the banking industry. Experts uncovered anomalous behavior in that interest-rate benchmark as compared to movements in other publically available data points (data points that were independent of the banks' purported individualized judgment). Screens also led to the initial detection, in the summer of 2013, of foreign exchange benchmark collusion and manipulation, which resulted in excess of \$3 billion in first round settlement payments by banks in the U.S., the U.K., and Switzerland in November 2014.

- c) Screen #3: Plaintiffs' experts identified days where ISDAfix was significantly different from the market rates quoted within the polling window. In particular, they flagged days for which ISDAfix was lower than the minimum price taken from 11:00 to 11:15 a.m., or higher than the maximum price taken from 11:00 to 11:15 a.m.
- d) Screen #4: Plaintiffs' experts identified whether any potentially anomalous moves could be explained by overall market volatility. Plaintiffs' experts ranked the largest market moves for each day during the period of January 2007 – December 2013, and examined whether moves during or close to the ISDAfix polling window were ranked among the top market moves for that day.

C. Defendants “Banged the Close” to Routinely Rig the Reference Rate

157. Throughout the Class Period, Defendants conspired to push prices to artificial levels through a manipulative trading strategy intended to move actual prices or swap rates around the time ISDAfix rates were set.

158. To move market prices or rates, Defendant Banks executed a series of rapid-fire trades and submitted executable bids and offers shortly before the reference rate was set.⁸² These trades and bids and offers were not reflective of the market, but were instead artificial and reflective of the Banks' desire to move ISDAfix rates to whatever level benefitted their trading books.⁸³ Defendant Banks fixed the price of the reference rate by asking ICAP how to get to a

⁸² Regardless of whether “banging the close” is or can be a proper trading strategy when conducted in isolation or pursuant to an arm’s-length transaction, it is illegal when done pursuant to and in order to effectuate an antitrust conspiracy.

⁸³ See, e.g., CFTC Order Instituting Proceedings Pursuant to Sections 6(c) and 6(d) of the Commodity Exchange Act, Making Findings, and Imposing Remedial Sanctions against Citibank (May 25, 2016), at 3 (finding that “Citibank attempted to manipulate USD ISDAFIX by bidding, offering, and executing transactions in targeted interest rate products, including swap spreads and U.S. Treasuries at or near the critical 11 :00 a.m. fixing time, with the intent to affect ... the published USD ISDAFIX”); CFTC Order Instituting Proceedings Pursuant to Sections 6(c) and 6(d) of the Commodity Exchange Act, Making Findings, and Imposing Remedial Sanctions against Barclays (May 20, 2015), at 7, fn 7 (finding that “[o]n two occasions, there is evidence that Barclays swaps traders also attempted to manipulate on-exchange Eurodollar futures at

particular price, knowing that ICAP would share price information from the other panel banks that would allow the requesting bank to arrange its trades in such a way as to successfully move the reference rate with the knowledge the efforts would not be undermined by opposing movements by the other banks.

159. As seen in government findings in the FX, LIBOR, and other scandals similar to this one, Defendants' traders used telephone calls, emails, and instant message or chat room conversations to coordinate their activities. And they also were able to coordinate through go-betweens, like ICAP here. This included, as summarized in Section I.D, sharing information about the banks' respective exposures and pricing goals; entry into inter-Defendant deals to prevent the banks from tripping over each other; and coordination as to the timing of transactions to ensure they would (if the transaction was in the "right" direction vis-à-vis the current market) or would not (if it was in the "wrong" direction vis-à-vis the current market) impact the market just before the reference rate was set.⁸⁴

11:00 a.m. to advantage the Bank in connection with early-terminating swaps."); CFTC *Order Instituting Proceedings Pursuant to Section 6(c) and 6(d) of the Commodity Exchange Act, Making Findings, and Imposing Remedial Sanctions* against Goldman Sachs (Dec. 21, 2016) at 2-3, and 9 (finding that a "method [of manipulation employed by Goldman] was to bid, offer, and trade the instruments that could influence Swap Broker's reference rates ... at and around Swaps Broker's 11 :00 a.m. print, in a manner designed to push USD ISDAFIX rates in a favorable direction.").

⁸⁴ Notably, these communications would need not have included every Defendant Bank on every day. Each conspirator knew its daily role, at a minimum, was to rubberstamp the reference rate, as discussed in Section II above. Thus, only the subset of Defendant Banks that had a particular interest in moving the rate on a given day had to carry out the anomalous trading that day. But, by subsequently rubberstamping the resulting artificial reference rate, *all* Defendants participated in the conspiracy on a *daily* basis.

160. According to anonymous witnesses interviewed by Bloomberg, “swaption traders at banks worked with rate-swap traders at their own firms to manipulate ISDAfix.”⁸⁵ Pursuant to their agreements with traders at other Defendant Banks, these “swaption traders told their rate-swap colleagues the level at which they needed ISDAfix to be set that day in order to bolster the value of their derivatives positions before these were settled the next day.” Those “rate-swap trader[s] would then tell a broker at ICAP . . . to execute as many trades in interest-rate swaps as necessary to move ISDAfix to the desired level.” Correspondence produced by the Defendant Banks to the CFTC “show[s] that traders at Wall Street banks instructed ICAP plc brokers to buy or sell as many interest-rate swaps as necessary to move the benchmark . . .” According to a source interviewed by Bloomberg, the Defendant Banks “sought to change the value of the swaps because the ISDAfix rate sets” swaptions prices.

161. Pursuant to these agreements between the Defendant Banks’ rate-swap traders and ICAP, the Defendants would execute an inordinately high volume of transactions during or just before the first two minutes of the ICAP polling window. According to one witness interviewed by Bloomberg, “[t]his would be done just before 11 a.m. in New York.”⁸⁶ The ICAP brokers had a strong incentive to participate in this conspiracy, as they would receive commissions on derivatives executed to move the ISDAfix rate and generate more overall transaction flow from the Defendant Banks. Consequently, ICAP brokers gladly assisted Defendant Banks in executing an exceedingly high volume of trades just before the reference rate was set.

⁸⁵ Matthew Leising, *Swaps Probe Finds Banks Rigged Rate at Expense of Retirees* Bloomberg (Aug. 2, 2013), <http://www.bloomberg.com/news/2013-08-02/swaps-probe-finds-banks-manipulated-rate-at-expense-of-retirees.html>.

⁸⁶ *Id.*

162. ICAP brokers profited off each and every one of these trades; the higher the volume, the better. The approximately 20 interest rate swap brokers at ICAP would receive commissions based on every interest rate swap they facilitated. This group of brokers made \$100 million to \$120 million annually for ICAP in 2008 and 2009, according to individuals interviewed by Bloomberg. ICAP paid its brokers on average 61% of the revenue they generated in the six months ending in September 2012, according to an ICAP presentation dated November 14, 2012. ICAP paid brokers who used its electronic trading systems about 10-15% of revenue they generated.⁸⁷ The top three to five brokers were each paid \$5 million to \$7 million annually. The amount of profit flowing through ICAP, in part because of the Defendant Banks' manipulative trading, earned ICAP's New Jersey office the name "Treasure Island."

163. Defendant Banks were willing to pay large execution fees to ICAP because they stood to gain millions of dollars on interest rate derivatives by moving the USD ISDAfix rates. This is true even if the USD ISDAfix rates moved only as little as a basis point, because interest rate derivatives involve huge notional amounts. For example, for a \$100 million 10-year swap transaction, each change of one basis point amounts to a gain of about \$93,000.⁸⁸ On swaptions, Defendant Banks stood to gain even more because by "manipulating ISDAfix by as little as a quarter of a basis point, or 0.0025 percentage point," they "stood to earn millions."⁸⁹

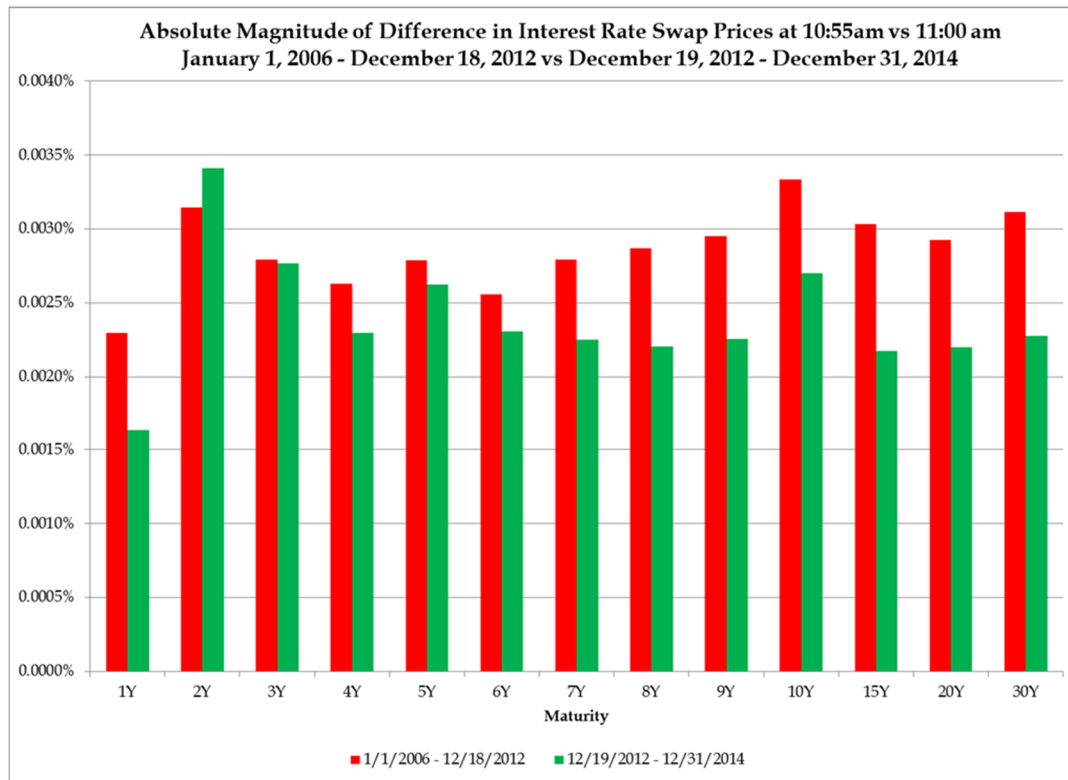
⁸⁷ Matthew Leising, *ICAP Brokers on 'Treasure Island' Said to Reap ISDAfix Rewards* Bloomberg (Apr. 10, 2013), <http://www.bloomberg.com/news/articles/2013-04-10/icap-brokers-on-treasure-island-said-to-reap-isdafix-rewards>; *see also* ICAP, *Half Year Results Six months to 30 September 2012*, ICAP.com, 8 (Nov. 14, 2012), <http://www.icap.com/investor-relations/reports-and-presentations/~media/Files/I/Icap-Corp/reports-and-presentations/year-2012-13/hy-presentation-30-sept-2012.pdf>.

⁸⁸ Mackenzie, *et al.*, *supra* note 7.

⁸⁹ Leising, *supra* note 49.

164. Plaintiffs' experts analyzed whether swap prices leading up to the polling window were being manipulated, in an effort to "bang the close" and affect market rates at 11:00 a.m. when ICAP puts forward the reference rates for ISDAfix. Specifically, they calculated the difference between the price at 10:55 a.m. and the price at 11:00 a.m., took the absolute value of this difference for each day, and then averaged these differences within two periods: from January 2006 through December 18, 2012, and from December 19, 2012 through December 2014. If up to December 18, 2012 prices were being manipulated either downwards or upwards in the last five minutes leading up to 11:00 a.m., but such manipulative conduct started to dissipate afterwards, then these absolute differences in prices at 10:55 a.m. versus 11:00 a.m. would have been larger up to December 18, 2012 than afterwards.

165. And this is in fact what the data shows. The figure below shows that for 12 out of the 13 tenors (the exception being 2Y), the differences between the 10:55 a.m. and the 11:00 a.m. prices are clearly reduced from before to after December 18, 2012 (*i.e.*, the red bars are taller than the green bars). This is consistent with a significant banging the close practice in either direction from 10:55 a.m. to 11:00 a.m. that was significantly reduced since December 19, 2012.



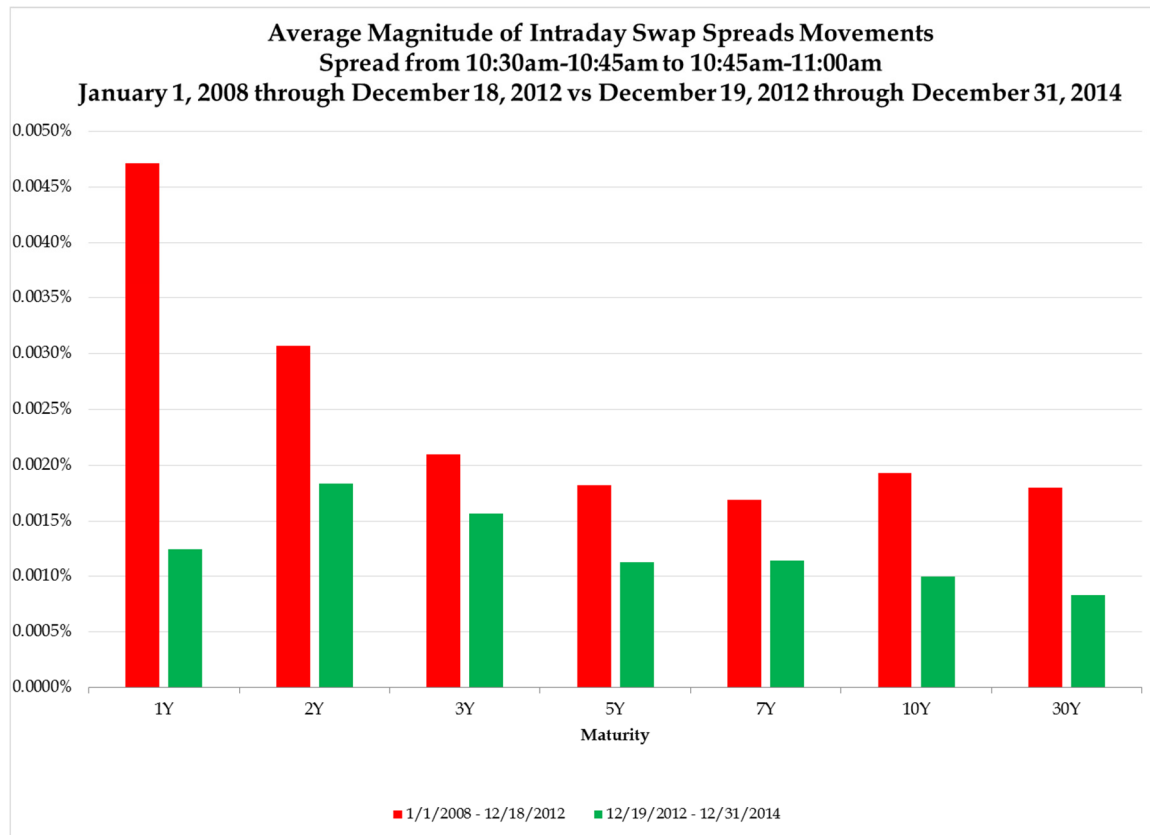
166. This practice of banging the close is further reinforced when comparing the difference between swaps rates and Treasury yields at the minute level. The difference between the ISDAfix rate for a given maturity and the treasury yield for the same maturity is known as the swap spread. Both represent fixed rate commitments, though reflecting differing credit and liquidity risks between the private and the public sectors. Despite some differences between the two rates, these tend to track each other on an intraday basis, meaning, market quotes for swap rates tend to move along with market quotes for treasury yields. Therefore, comparing swap rates to treasuries is a reasonable method to control for key market factors that affect both rates, and in this way evaluate whether movements in swap rates are reflective of changes in market forces.

167. Plaintiffs' experts compared how the intraday swap spread (defined as the swap rate minus the treasury yield rate at the same moment in time for a given tenor), changed on

average in terms of magnitude from the fifteen-minute interval 10:30 a.m. – 10:45 a.m. to the immediately following fifteen-minute interval 10:45 a.m. – 11:00 a.m., before and after December 18, 2012.

168. Large movements in swap spreads from one block of time to another around the fixing period could be a signal of artificiality as swap rates move distinctly from Treasury yields, and that is what Plaintiffs' experts found.

169. As shown in the graph below, the swap spread changed significantly prior to December 18, 2012 from the fifteen minutes covered by 10:30 a.m. – 10:45 a.m., to the fifteen minutes leading up to the polling window, *i.e.*, 10:45 a.m. – 11:00 a.m. (as illustrated by the red bars). But these changes in intraday swap spreads between these two sequential fifteen minute windows of time were very significantly reduced from the end of 2012 onwards (that is, the green bars are much lower than red). This is consistent with artificiality of intraday swap rates leading up to the polling window prior to December 2012 but not afterwards.

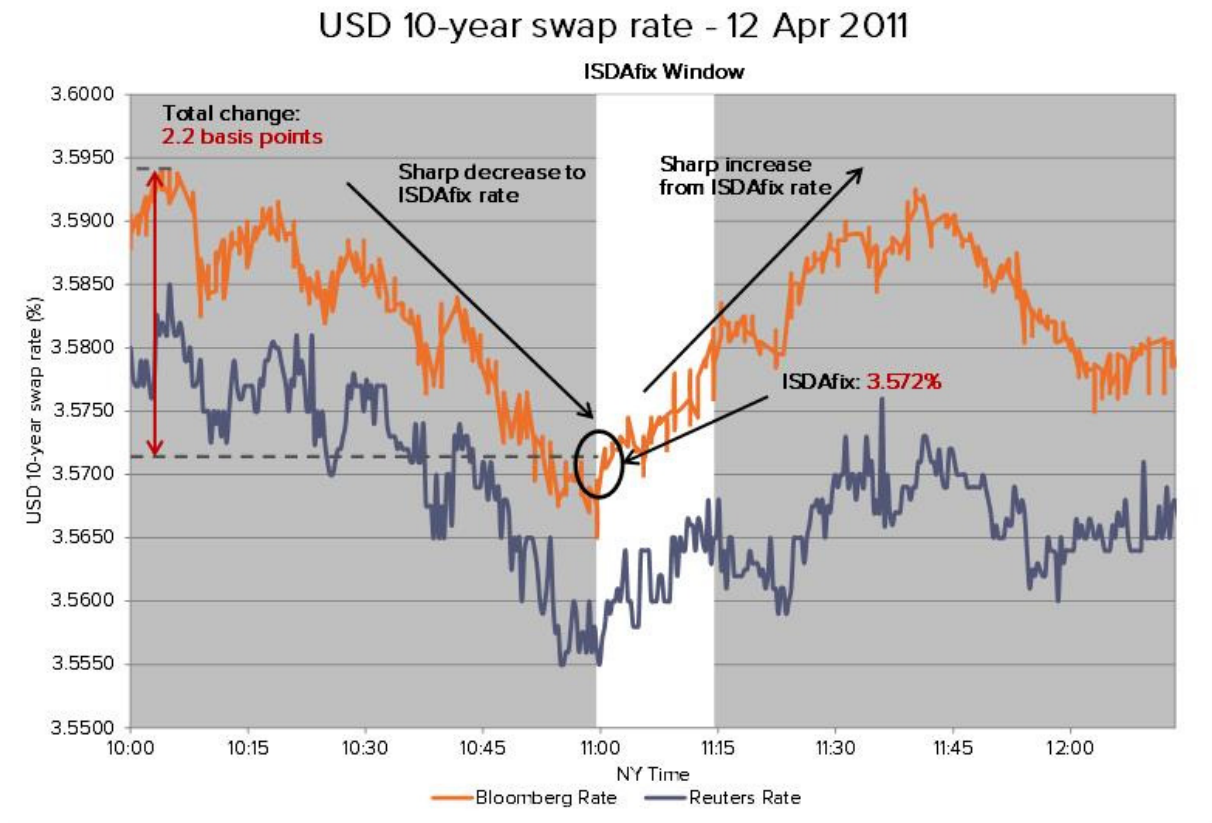


170. The analyses below illustrate some of these patterns for specific days.

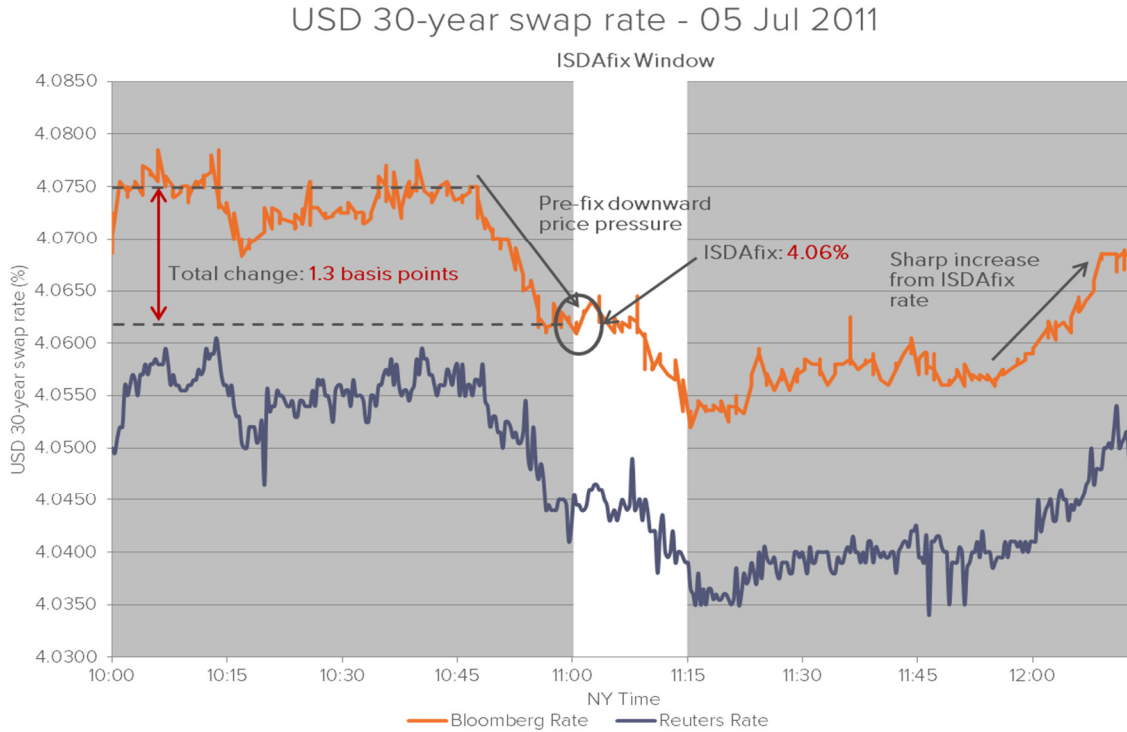
171. The following chart, which tracks rates leading up to the polling window on April 12, 2011, illustrates Defendant Banks' banging the close strategy for a specific day. There is a sharp decrease in prices leading up to the 11:00 a.m. setting of the reference rate, after which the downward trend mysteriously ceases.⁹⁰ This is consistent with pushing through a large volume

⁹⁰ The two lines represent historical intra-day swap prices quoted using two different sets of conventions of quoting swap rates. The orange line represents a swap rate quoted on a "semi-annual, 30/360" basis and is available through Bloomberg. The blue line represents a swap rate quoted on an "annual, act/360" basis and is available through Reuters. ISDAfix is quoted on the same basis as the orange Bloomberg rate, and the ISDAfix reference point and contributor quotes are linked to that rate. The two rates are very similar, and their trends will track each other with only a small, consistent gap in basis points. Plaintiffs present data using both where available to demonstrate the similarity between the two, but there is a greater historical availability for the Reuters rate, and in some charts only the Reuters data is available. Plaintiffs will note when the data presented is solely based off the Reuters rate.

of transactions and executable bids and offers at artificially low fixed rates before the polling process started in an effort to drive the ISDAfix rate down.

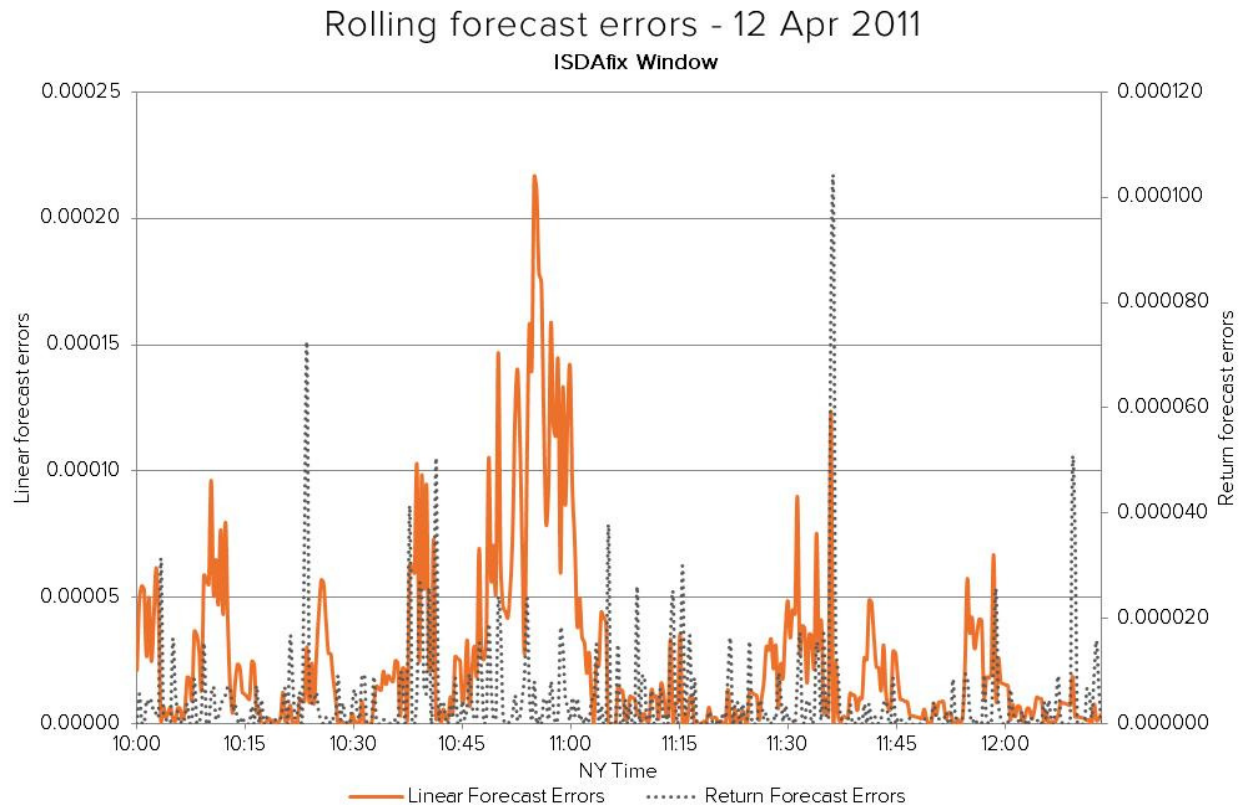


172. The following chart likewise shows a sharp drop in the 30-year swap rate just before the polling period. This is another example of Defendants' efforts to execute a high volume of low-rate transactions and submit low-rate executable bids and offers in the minutes leading up to the polling period.



173. To see “banging the close” from another angle, Plaintiffs’ experts calculated “rolling forecast errors” associated with anomalous moves in the swap rate. This consists of a “linear forecast error,” which is the squared difference between the current swap rate and the average swap rate in the previous 30 minutes, and a “return forecast error,” which is calculated the same way using returns, as opposed to swap rates themselves. A higher linear forecast error means that the ISDAfix rate is changing at a more rapid pace.

174. Economic analysis confirms that often swap rates surrounding the polling period varied substantially from swap rates in the surrounding 30 minutes. The following chart shows how quickly rates were changing on April 12, 2011, a representative day during the Class Period. The large spike indicates that the 10-year rate was changing twice as quickly during the period leading up to the 11:00 a.m. setting of the reference rate, than it was at any other time of the morning. This again strongly suggests a calculated shift in transactional behavior.



D. Defendants Conspired with ICAP to Delay the Publication of Price Information in Order to Manipulate the Reference Rate

175. Defendants Banks not only manipulated prices on the swap market in order to manipulate the ISDAfix reference rate (and thus, the ISDAfix rates derived there from); they also manipulated the ISDAfix reference rate by conspiring with ICAP to delay entry of certain swap transactions on Screen 19901 until the polling period was over. This was done to keep any undesirable transactions from being part of the data from which the reference rate would be calculated – *i.e.*, those which, when incorporated into the reference rate, would move that rate away from the level at which Defendants intended to set ISDAfix.

176. During the Class Period, banks often went through ICAP if they wished to engage in a USD interest rate swap with another dealer. ICAP brokers manually entered rates onto a screen and were in full control of when rates were published. Typically, when ICAP brokered an